MAR. 87
No. 6353R

JVC Service Manual

COLOUR SPECIAL EFFECTS GENERATOR

MODEL KM-2000

VICTOR COMPANY OF JAPAN, LIMITED

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

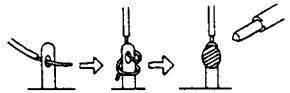


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

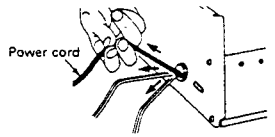


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) Connector part number : E03830-001
    2) Required tool : Connector crimping tool of the proper type which will not damage insulated parts.
    3) Replacement procedure
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

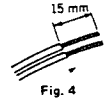


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

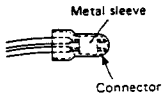


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

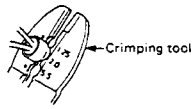


Fig. 6

(5) Check the four points noted in Fig. 7.

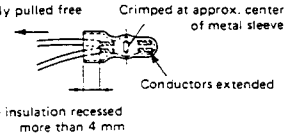

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

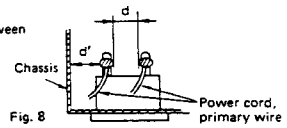


Fig. 8

4. **Leakage current test**
Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
Measuring Method: (Power ON)
Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts.
Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

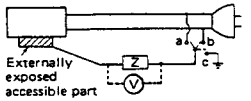


Fig. 9

5. **Grounding (Class I model only)**
Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
Measuring Method:
Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

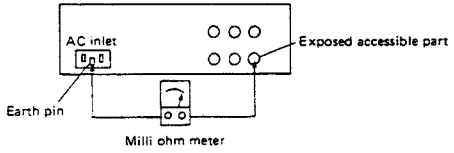


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

SECTION 1
GENERAL DESCRIPTION

1.1 INTRODUCTION

This manual provides service information for JVC colour special effects generator Model KM-2000.
Service procedures given herein cover only field maintenance service.
Adjustments which require high level instruments, jigs and techniques are excluded.
E (EA, EG, EK) type for PAL model, U type for NTSC model.

Due to design modifications, the servicing procedures and data given in this manual are subject to possible change whithout prior notice.

1.2 WARNING

1. KM-2000U/E (NTSC and PAL versions)

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

AVERTISSEMENT:
POWER EVITER LES RISQUES D'INCENDIE'OU D'ELECTROCUTION, NE PAS EXPOSER L'APPAREIL A L'HUMIDITE OU A LAPLUIE.

Warning Notice
FOR YOUR SAFETY

To ensure safe operation the three-pin plug supplied must be inserted only into a standard three-pin power point which is effectively earthed through the normal household wiring.
Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth. Wrongly wired extension cords are a major cause of fatalities.
The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe. For your safety, if in any doubt about the effective earthing of the power point, consult a qualified electrician.

2. KM-2000E (PAL versions)

CAUTION!
CHECK YOUR LINE VOLTAGE.

The KM-2000E has been preset for a line voltage of 220 V or 240 V. Before inserting the power plug, please check this setting to see that it corresponds with the line voltage in your area.
If it doesn't be sure, adjust the voltage selector to the proper setting before operating this equipment.
The voltage selector switch is located on the MAIN unit's rear panel.
Simply insert a screwdriver into the voltage selector and turn to adequate voltage.

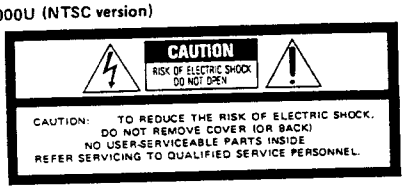
WARNING – THIS APPLIANCE MUST BE EARTHED
IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

GREEN-AND-YELLOW:	EARTH
BLUE:	NEUTRAL
BROWN:	LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows. The wire which is the wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked with the letter E or by the safety earth symbol or coloured GREEN or GREEN-AND-YELLOW.
The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BALACK.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

3. KM-2000U (NTSC version)


CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

6-7

1.3 PRECAUTION FOR INSTALLATION

1. Use care that equipment is not subjected to strong vibrations or shock when installed or while being transported.
2. Avoid using in locations with high temperature or high humidity.
3. When operating fader levers, do not apply excessive force or handle roughly.
4. Equipment should be as nearly horizontal as possible when operating.

1.4 FEATURES

1. Eight inputs (VBS), three bussses.
2. Two fader levers.
3. AUX input terminal for non-synchronous input.
4. Built-in chroma keyer with selectable chroma key color.
5. 13 wipe patterns with soft edge wipe control.
6. Built-in color background generator; adjustable background color.
7. Color downstream keyer with key edger and polarity select switch; adjustable insertion color.
8. B/W superimpose circuit with cut and fade switch.
9. External key input provided; switchable between chroma key and external key.
10. Vertical interval switching.
11. Built-in S.S.G.; external black burst signal, HD, VD and SYNC pulses provided. This makes possible genlocking with an external video signal or black burst signal in external genlock applications.
    External S.S.G.; the external SSG makes possible pluse drive.
12. Intercom and tally circuits provided.
13. DSK PVM output provided.
14. PROGRAM FADE switch permits fade to black.
15. AUTO TAKE is possible from PREVIEW LINE to input-C LINE.

1.5 SPECIFICATION

1. KM-2000U (NTSC version)

Video inputs	: Eight composite video signals 1.0 Vp-p 75 ohms or high (BNC)
AUX input	: One composite video signal (non-synchronous) 1.0 Vp-p 75 ohms or high (BNC)
Chroma key inputs	: R.G.B. non-composite video signals 0.7 Vp-p 75 ohms or high (BNC)
External key input	: One composite or non-composite video signal 1.0/0.7 Vp-p 75 ohms or high (BNC)
D.S.K input (Downstream key)	: One composite video signals 1.0 Vp-p 75 ohms or high (BNC)
B/W superimpose input	: One composite video signal 1.0 Vp-p 75 ohms or high (BNC)
Ext. wipe MOD input	: 0 dBm nominal mini-jack (600 Ω)
Program output	: Three composite video signals 1.0 Vp-p 75 ohms (BNC)
Preview output	: One composite video signal 1.0 Vp-p 75 ohms (BNC)
Frequency response	: 60 Hz to 5 MHz ±0.2 dB
DG	: Less than 1.5 % at 10 to 90 % APL
DP	: Less than 1.5 % at 10 to 90 % APL
S/N	: More than 55 dB (p-p/rms)
Sync output	: HD, VD, composite SYNC for external synchronization of B/W camera. 4 Vp-p 75 ohms. (BNC) Black burst signals 0.45 Vp-p 75 ohms. (Two) (with SETUP x 1, without SETUP x 1) For camera genlocking (BNC)
Synchronization system	: 1. Internal mode 2. External mode — Genlocked by composite video or black burst signal 3. Pulse drive mode — External SYNC, BL, HD, VD, BFP, SC
	Note: Required internal switching. Refer to page 1-9.

8 9

Subcarrier phase	: Adjustable from 0° to 360°
Coarse	: In steps (0°, 120°, 240°)
Fine	: Continuously variable between steps
Horizontal phase accuracy	: ±0.1 microseconds (with reference to the input synchronization signal)

Wipe patterns

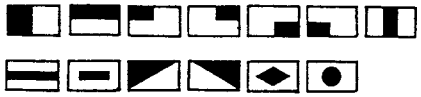


Fig. 1-1

Positioner	: Effective to ▬ ◆ ●
Tally	: 5 V (10 mA) DC or dry contact by external switching
Intercom system	: Three headset jacks provided on the front panel of MAIN UNIT Made to PJ-051, #310 or TAD 3 type plug External input terminal provided on the rear panel.
Ambient temperature range	: 0°C to 40°C (32°F to 112°F)
Power consumption	: AC 120 V 60 Hz 50 W (with Control unit)
Dimensions & weight	1. Main unit 175(H)x482(W)x250(D)mm Standard EIA rack size (4 unit size) 10.5 kg 2. Control unit 265(H)x482(W)x90(D)mm Standard EIA rack size (6 unit size) 5.0 kg

* The two units are connected with 5 m cables of 50 and 24 pin connectors.

Accessories

Power cord	: QMP9003-016
Flat cable	: SC30301-50-050 (50 pin) SC30301-24-050 (24 pin)
Coaxial cable (BNC-BNC)	: SC30363-040
BNC termination plug (75 Ω)	: SCV0286-001
Mini plug	: QMS3581-002
Assembly lamp	: SCV0302-100
Extension board	: SCK1044

2 KM-2000E (PAL version)

Video inputs	: Eight composite video signals 1.0 Vp-p 75 ohms or high (BNC)
AUX input	: One composite video signal (non-synchronous) 1.0 Vp-p 75 ohms or high (BNC)
Chroma key inputs	: R.G.B. non-composite video signals 0.7 Vp-p 75 ohms or high (BNC)
External key input	: One composite or non-composite video signal 1.0/0.7 Vp-p 75 ohms or high (BNC)
D.S.K. input (Downstream key)	: One composite video signals 1.0 Vp-p 75 ohms or high
B/W superimpose input	: One composite video signal 1.0 Vp-p 75 ohms or high (BNC)
Ext. wipe MOD input	: 0 dBm nominal (600 Ω) mini-jack
Program output	: Three composite video signals 1.0 Vp-p 75 ohms (BNC)
Preview output	: One composite video signal 1.0 Vp-p 75 ohms (BNC)
Frequency response	: 60 Hz to 5 MHz ±0.2 dB
DG	: Less than 1.5 % at 10 to 90 % APL
DP	: Less than 1.5° at 10 to 90 % APL
S/N	: More than 60 dB (p-p/rms)
Sync output	: HD, VD, composite SYNC for external synchronization of B/W camera. 4 Vp-p 75 ohms. (BNC) Black burst signals 0.45 Vp-p 75 ohms (Two) (with SETUP x 1, without SETUP x 1)(BNC)
Synchronization system	: 1. Internal mode for camera genlocking 2. External mode – Genlocked by composite video or black burst signal 3. Pulse drive mode – External SYNC, BL, HD, VD, BFP, SC

Note: Required internal switching. Refer to page 1-9.

Subcarrier phase	: Adjustable from 0° to 360°
Coarse	: In steps (0°, 120°, 240°)
Fine	: Continously variable between step
Horizontal phase accuracy	: ±0.1 microseconds (with reference to the input reference signal)

Wipe patterns

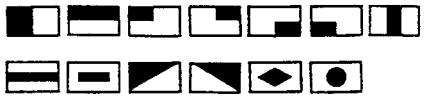


Fig. 1-2

Positioner	: Effective to ▭ ◈ ●
Tally	: 5 V (10 mA) DC or dry contact by external switching
Intercom system	: Three headset jacks provided on the front panel of MAIN UNIT. External input terminal provided on the rear panel.
Ambient temperature range	: 0°C to 40°C (32°F to 112°F)
Power consumption	: AC 220/240 V 50 Hz 50 W (with Control unit)
Dimensions & weight	: 1 Main unit 175(H)x482(W)x250(D)mm Standard EIA rack size (4 unit size) 10.5 kg 2 Control unit 265(H)x482(W)x90(D)mm Standard EIA rack size (6 unit size) 5.6 kg

* The two units are connected with 5 m cables of 50 and 24 pin connectors.

Accessories

Power cord	: GP32473-5MO (EG version) GP32474-5MO-BS (EK version) QMP2468-500 (EA version)
Flat cable	: SC30301-50-050 (50 pins) SC30301-24-050 (24 pins)

Coaxial cable (BNC-BNC): SC30363-040
BNC terminal plug (75 Ω): SCV0286-001

Mini plug	: QMS3581-002
Assembly lamp	: SCV0302-100
Extension board	: SCK1044

1.6 CONTROLS, CONNECTORS AND INDICATORS

1.6.1 MAIN UNIT

– FRONT VIEW –

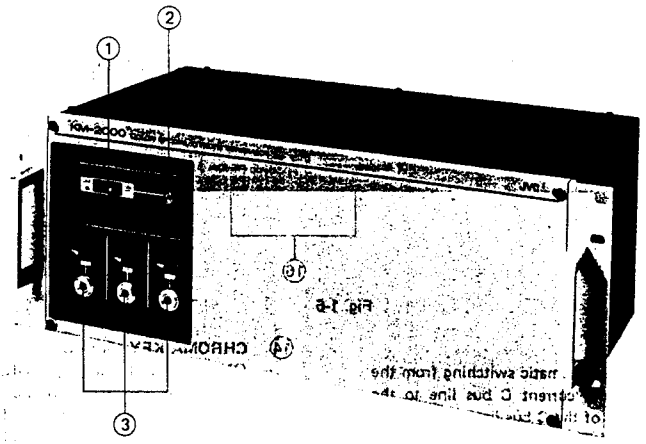


Fig. 1-3

– REAR VIEW –

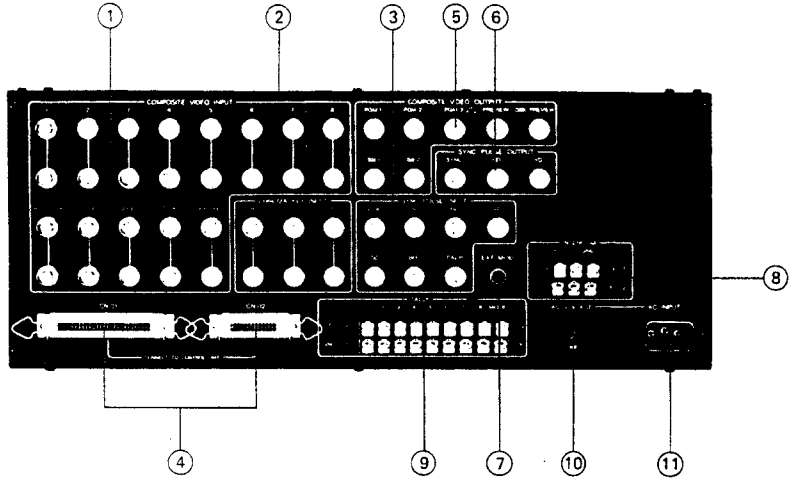


Fig. 1-4

FRONT

① **Power switch**

② **Power indicator**
This lights when the power is switched on.

③ **INTERCOME section**
These jacks are for the connection of up to 3 headsets; a control is provided by each for the setting of the volume.

REAR

① **COMPOSITE VIDEO INPUT connectors**
These are BNC terminals for the bridged connection of video inputs; when not bridged connected, terminate with the 75 Ω terminal resistor provided.

(Video inputs 1–8)
Input connectors for gen-locked video signals.

(GEN-LOCK)
Reference signal (VBS) input connector for synchronizing with external Composite Video signal.

(AUX)
For input of video signal not synchronized with system.

(SUPER)
For input of video signal to be superimposed.

(DSK)
For input downstream keyer (D.S.K.) video signal.

(EXT-KEY)
For input of external key video signal.

② **CHROMA KEY INPUT Connectors**
Bridged input connectors for CHROMA KEY signals (R.G.B signals without sync). If not bridge connected, terminate with 75 Ω terminal resistor provided.

③ **SYNC PULSE INPUT connectors**
SSG sync pulse input connectors when synchronizing with external SSG. terminated by built-in 75 Ω terminal resitor.

④ **CONTROL UNIT connectors**
To be connected to the Control Unit with the cable provided.

⑤ **COMPOSITE VIDEO OUTPUT connectors**

(PGM1–3)
Program video output connectors

(PREVIEW)
Preview video output connector.

(D.S.K PREVIEW)
D.S.K (downstream keyer) preview output connector for preview use only.

(BB-1, BB-2)
75 Ω output connectors for B.B (Black Burst) signal to Gen Lock with other systems.
BB-1 . . . . . without set-up
BB-2 . . . . . with 75 % set-up
When the BB outputs are not used, terminate with 75 Ω terminal resistors.

⑥ **SYNC PULSE output connectors**
75 Ω output connectors for HD, VD, SYNC signal. Used to gen-lock superimpose and D.S.K signal sources.

⑦ **EXT. MOD. connector**
Requires 0 dBm (600 Ω) external moudulating signal input (mini-plug). When using in wipe mode, the wipe pattern can be modulated by inputting an audio signal to this terminal.

⑧ **INTERCOM connector**
When connected to the intercom line of the video camera remote control (RS-2000 and RS1900), intercommunication is possible.

⑨ **TALLY connectors**
Tally signal output connectors, coupled with remote control tally line. Contact or Voltage feed can be selected by shorting or opening the MODE terminal on the right.
(Select switch "Voltage" to both the RS-2000 and RS-1900)

⑩ **VOLTAGE selector (E Model only)**
Select the line voltage.

⑪ **AC INPUT**
Connect the power cable provided.

1-5

1.6.2 CONTROL UNIT

– FRONT VIEW –

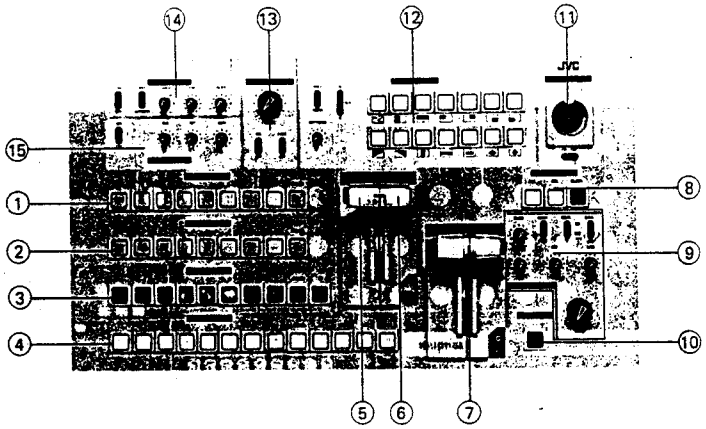


Fig. 1-5

FRONT

① **INPUT A bus-line**
Input A selector for MIX-SE (combination of A bus and B bus inputs) circuit. A total of video signals can be selected: 8 video signal inputs and the Internal Color Generator Signal (for color background). When a button is pressed, it lights to show the input selected.

② **INPUT B bus-line**
Input B selector for MIX/SE (combination of A bus and B bus inputs) circuit. The same 9 inputs as for Input A can be selected.

③ **INPUT C bus-line**
Input C selector for MIX (combination of MIX-SE output signal and C bus input signal) circuit. A total of 10 video signal can be selected; the 8 video signal inputs, color (color background) and MIX/SE output.

④ **PREVIEW bus-line**
Selector for preview monitoring the video signal before inputting to program. VIDEO INPUT (1–8), Super, SE (MIX/SE output), D.S.K, AUX AND PGM (line out) can be selected.

⑤⑥ **MIX/SE lever**
Input A and B mix/wipe control lever. If the MIX/KEY position of the WIPE MODE selector is selected, the amount of mix can be varied; if the WIPE pattern position is selected, the amount of wipe can be selected. Lever can be interlocked with a lock button or can be moved independently.

⑦ **MIX lever**
This varies the mix amount of the MIX/SE Output (combined output of A and B bus inputs) and video signal selected by the C bus. (It does not control wiping.)

⑧ **PROGRAM selectors**

AUX	:	The AUX input is output. (This video signal is not synchronized by the KM-2000. When selected, the synchronization of the output line is disturbed.)
EFF	:	The PGM (line out) is output.
BLACK	:	A black signal (with 7.5% set-up) is output.

(Note: Switching from BLACK to EFF automatically fades in and switching from EFF to BLACK automatically fades out.)

⑨ **Downstream keyer control**
Controls keying of D.S.K video signal to MIX output (combination of A, B and C inputs).

SLICE	:	Determines the slice level of the D.S.K input signal.
NEGA/POSI	:	Inverts negative and positive.
EDGE	:	Turn ON when edging D.S.K signal.
D.S.K	:	D.S.K signal output ON/OFF switch.
HUE	:	Adjusts hue.
SAT	:	Adjusts color saturation.
LUM	:	Adjusts luminance.
LEVEL	:	Adjusts D.S.K signal output level.

– REAR VIEW –

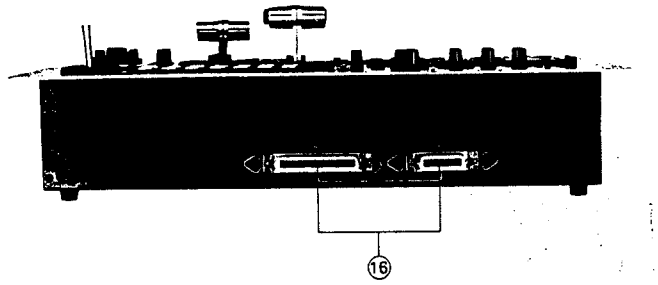


Fig. 1-6

⑩ **AUTOTAKE switch**
Pressing this allows automatic switching from the output signal of the current C bus line to the separate line signal of the C bus line selected with PREVIEW selector. The switched signal is output to PROGRAM out.

⑪ **POSITIONER joystick and switch**
When the ▭ ◈ ● patterns are selected with the WIPE MODE selector and POSITIONER switch is ON, the pattern can be moved to the required position on the screen with the joystick.

⑫ **WIPE Mode Selector**

MIX/KEY	:	This button is to be pressed when mixing inputs A and B.
WIPE MODE	:	The 13 wipe patterns indicated below the buttons can be selected.
N-R	:	Normal-Reverse switch This switch changes the direction of the wipe.
SOFT/HARD	:	Changes the edges on the screen during wipes. HARD : Hard edges. SOFT : Soft edges.
SOFTNESS	:	When using soft wipes, the degree of softness can be varied.

⑬ **SUPERIMPOSE controls**

LEVEL	:	Varies the level of the superimposed video signal; used to determine the most natural inseting point.
ON/OFF	:	Superimpose on/off switch.
FADE/CUT	:	FEAD (AUTO FADE): When superimpose is turned on, it is inserted gradually. CUT: When superimpose is turned on, it is inserted immediately.

⑭ **CHROMA KEY controls**

ON/OFF	:	Keying signal ON/OFF switch.
EXT/CHROMA	:	Selects between EXT KEY signal and CHROMA KEY signal.
COARSE	:	Six position knob for coarse adjustment of the keying signal color. Blue, cyan, green, yellow, red and magenta positions.
FINE	:	For fine adjustment of the keying color.
SLICE	:	Adjust to determine the most natural position of keying effect.

⑮ **Color Background controls**

ON/OFF	:	Color signal generator circuit ON/OFF switch.
HUE	:	For adjustment of hue.
SAT	:	For adjustment of color saturation.
LUM	:	For adjustment of luminance.

Rear

⑯ **Control Cable Connectors**
These are for the connection to the MAIN unit.
CN01 . . . . . 50-pin connector
CN02 . . . . . 24-pin connector

Note: These can be provided on the bottom of unit as well. Refer to page 2-3 (Section 2).

When the control unit is installed on a slanting table, the slanting angle should be within the range of 45° to the horizontal surface. Otherwise, the levers of the control unit might slide down by their own weight.

1.7 CONNECTION

When operating the KM-2000, the whole system should be Gen-Locked. Gen-Lock modes are three as described in the following.

1.7.1 INTERNAL MODE

This locks the whole system to the SSG in the KM-2000. The typical system is shown below.

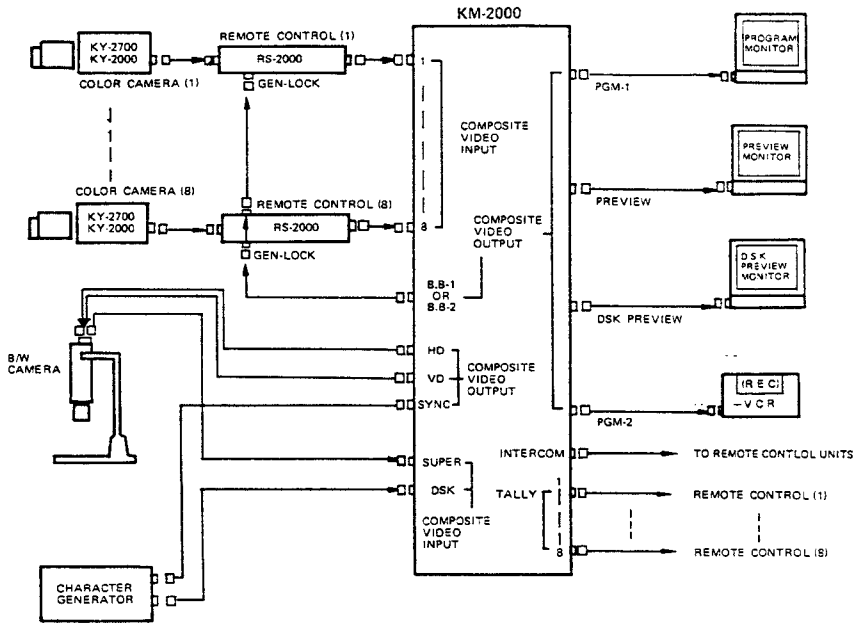


Fig. 1-7

Note: 1) When putting video signals into KM-2000 (connecting with a video camera), use a terminating plug (75 Ω).
2) Connection into INTERCOM or TALLY terminals, refer to Sect. 1.10 (p. 1-17).
3) When the BB outputs (BB-1, BB-2) are not used, terminate with 75 Ω terminal resistors.

1.7.2 EXTERNAL GENLOCK MODE

This gen-locks the system to an external composite video signal (VBS).
(KM-2000 is gen-locked by No. 8 input video signal.)

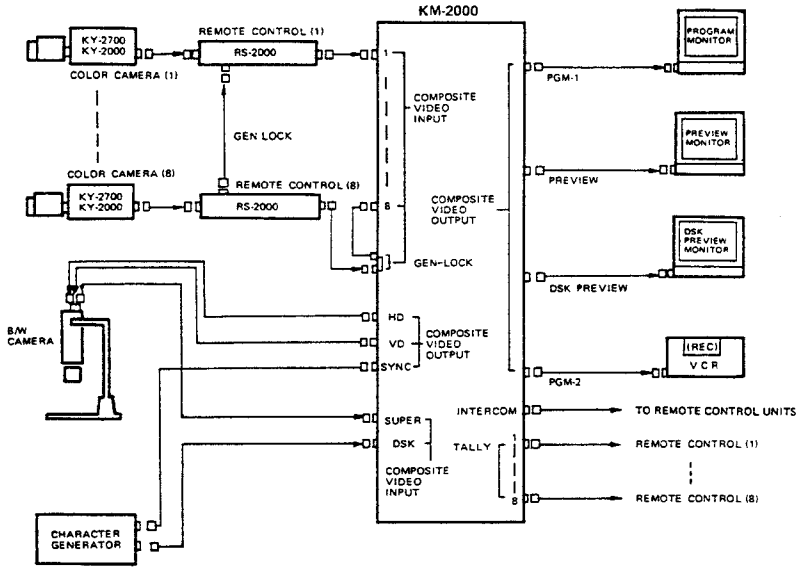


Fig. 1-8

Note: • As shown below, it is possible to incorporate a color video camera without a gen-lock facility or another signal source into the system including the KM-2000.

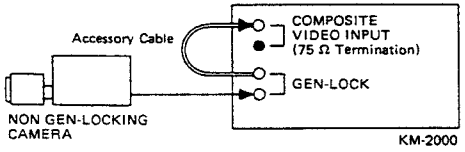


Fig. 1-9

Use the cable provided for the connection of the GEN-LOCK and the COMPOSITE VIDEO INPUT connectors. If the cable is not as specified, it is necessary to adjust the SC phase and H phase of the KM-2000 by the following method.

1) Loosen the four screws on the front panel of the main unit so that the front panel can be opened.
2) Select the picture of the gen-lock camera with the **INPUT A** bus-line switches, then operate MIX/SE and MIX levers and PROGRAM selector so that this picture is output to the PGM output.
3) Alternately switch between the INPUT and PGM of the gen-lock camera with the **PREVIEW** bus-line switches.
4) Now adjust the H. PHASE potentiometer on the SG board (bottom) of the KM-2000 so that the picture does not move to the left or right. At the same time, adjust the SC phase so that the colors match.

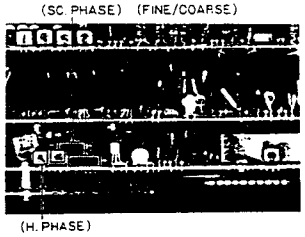


Fig. 1-10

1.7.3 EXT PULSE DRIVE MODE

This operates the KM-2000 with a drive signal from an external master SSG.

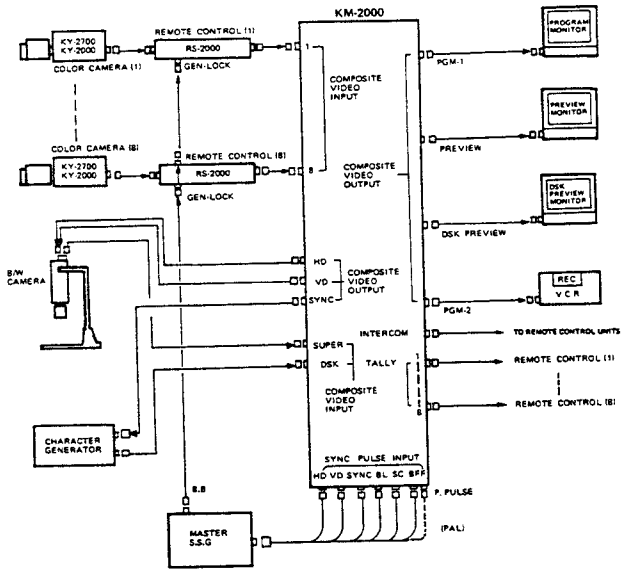


Fig. 1-11

[PREPARATION]

1) Open the front panel and switch the two **INT/EXT** switches (S1 and S2) on the SG board (at the bottom) to **EXT**.

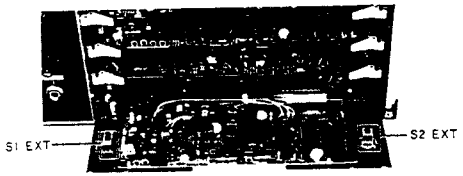


Fig. 1-12

2) Connect the SYNC, BL, HD, VD, BPF (4 Vp-p nominal) and SC (2 Vp-p nominal) lines.
3) One of the cameras to be input to the KM-2000 must be fed with the camera signal through the GEN-LOCK.
(This is because the timing pulse required for control is generated by the internal SSG of the KM-2000.)

This allows the KM-2000 to be driven with external SSG.

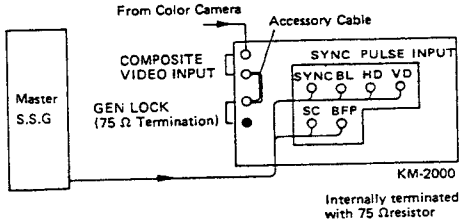


Fig. 1-13

Note: 1) An external SC phase shifter will be required to bring SC into phase.
2) Use this system when a fully synchronized output is required. The stability of the system is in the order 3.1.2.

1.8 PRIMARY ADJUSTMENT

Each of the devices in a system will have a different signal level and hue setting so that level adjustment is necessary. (When a vectorscope or waveform monitor is connected to the PREVIEW output, more accurate adjustment is possible.)

Adjust as follows:

1. Turn on the power supplies of all equipment in the system.
2. Switch on the Color Bar switches of the cameras.
3. Set the switches and levers of the KM-2000 control panel as follows:
   1) Slide the **MIX/SE** lever all the way to the A position.
   2) Slide the **MIX** lever all the way to the MIX/SE position.
   3) Press the **EFF** switch on the PROGRAM selector.

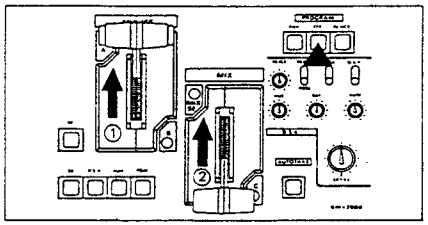


Fig. 1-14

4. Switch the **PREVIEW** bus-line switches to confirm that each camera's color bar signal is being output on the preview monitor.

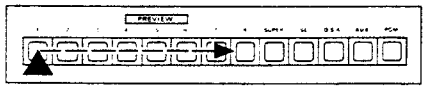


Fig. 1-15

5. Adjustment of horizontal phase and SC phase
   1) Press **INPUT A** switch "1".
   2) Alternately switch between **PREVIEW** switches "1" and "PGM".

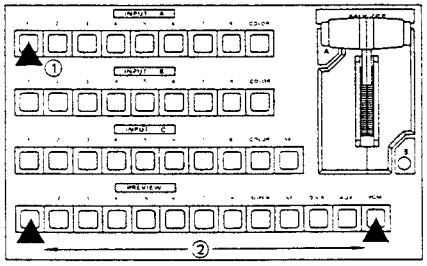
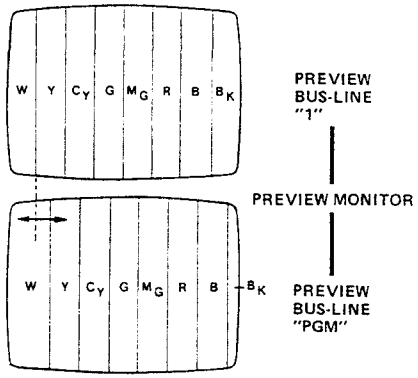


Fig. 1-16

3) Adjust horizontal (H) phase with the camera's remote control unit so that there is no difference in the horizontal phase of the image on the preview monitor (the image should not move to the left and right).



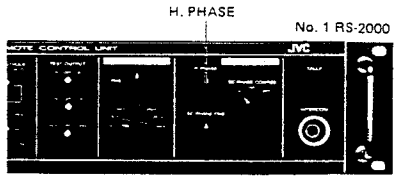


Fig. 1-17

4 When the switching (2) above is being performed, adjust the SC phase controls on the camera's remote control so that the color bars on the monitor are consistent.

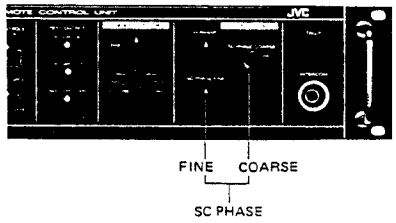


Fig. 1-18

Note: If phase cannot be adjusted with a remote control, use the camera's controls.

6. Perform these adjustments for all color cameras in the system.
7. Shoot the same object with all cameras; switching squentially from **PREVIEW** bus-line switch "1", fine-adjust the black level (pedestal level), white level (video level), chroma level, hue, etc.

1.9 OPERATION

1.9.1 Primary functions

After completing connection, set switches, levers, etc. as shown.

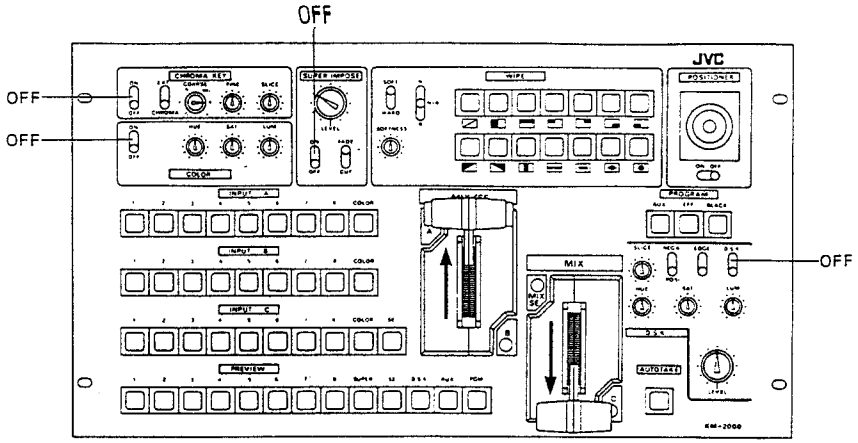


Fig. 1-19

When the power is turned on, press the "1" switches of the **INPUT A, INPUT B, INPUT C** and **PREVIEW** bus-lines; the "1" lamp of each line will light.
The wipe mode is released (set to **MIX/KEY**) and the program mode is set to **EFF** (for transmission of the program output).

1. **Picture selection**

The following two mehods can be used to output the PGM output by switching between cameras:

1) Switching

Slide the **MIX** lever all the way to C; now when the required **INPUT C** bus-line button is pressed, the required signal is output as the P.G.M output.

2) Autotake

While outputting the PGM output from the C bus-line, select the required picture by pressing one of the **PREVIEW** buttons. If the autotake button is pressed after checking the picture on the preview monitor, it will be output to the PGM output. (Pictures cannot be output from SUPER, DSK, AUX and PGM switches.)

2. **MIX operations**

This allows the mixing of the **INPUT A** and **INPUT B** bus-line pictures by the following procedure.

1) Set the PROGRAM selector to **EFF.**
2) Set the WIPE mode selector to **MIX/KEY.**
3) Slide the **MIX/SE** lever to A.
4) Slide the **MIX** lever to MIX/SE.
5) Press the necessary **INPUT A** and **INPUT B** bus-lines buttons to obtain the required picture.
6) When the **MIX/SE** lever is gradually slid towards B, the **INPUT B** picture gradually mixes over the **INPUT A** picture until it dissolves into the B picture.
7) Select **INPUT A** when cameras are not connected, but black burst signals are input.
8) If the **MIX/SE** lever is now slid towards A, **INPUT B** gradually fades out.
9) If the required signal is selected with **INPUT B** bus-line buttons, and the **MIX/SE** lever is gradually slid to B, the B input picture is gradually faded in.

Note: Mixing, dissolves, fade-in and fade-out effects between the MIX/SE output and C bus line are possible using the **MIX** lever.

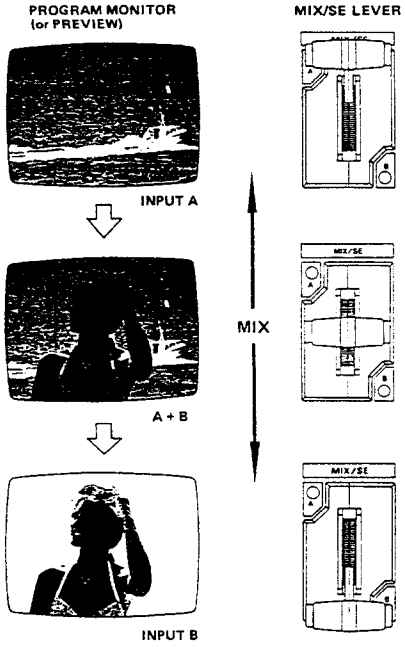


Fig. 1-20

3. WIPE operation

Changing between the **INPUT A** bus-line and **INPUT B** bus-line pictures is possible by wiping them vertically and horizontally.

1) Set the PROGRAM selector to **EFF**.
2) Slide the **MIX** lever to MIX/SE.
3) Slide the **MIX/SE** lever to A.
4) Select the required **INPUT A** bus-line picture.
5) Specify the required wipe pattern.

At this time, the wiper pattern used is ▬ .

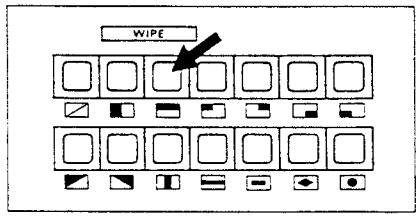


Fig. 1-21

6) Select the picture you want to change to with **INPUT B** bus-line Button.
7) By sliding **MIX/SE** lever gradually to B, **INPUT A** is wiped and finally replaced by **INPUT B**.

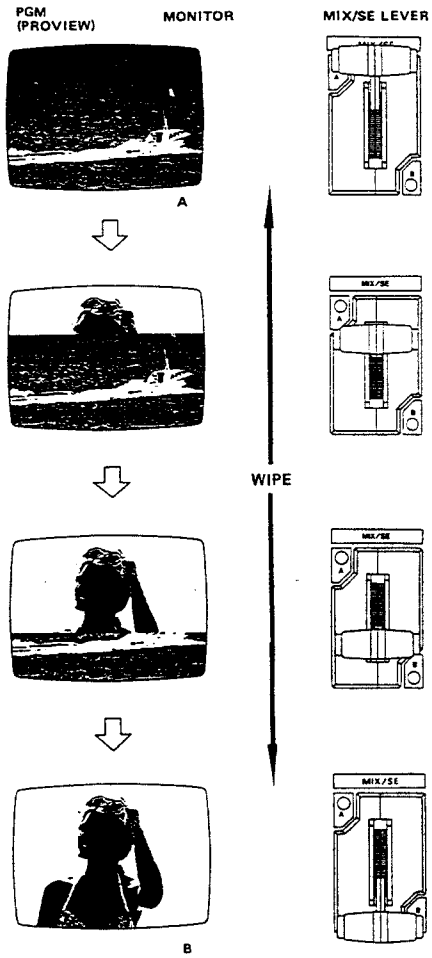


Fig. 1-22

Note: Wiping is possible using the **MIX/SE** lever but not the **MIX** lever.

4. SUPERIMPOSE operation

This operation superimposes a white character or graphics over the MIX output (combination of A, B and C inputs).

1) The character/graphic signal from a B/W camera is to be fed into the **SUPER** input terminal on the rear of the MAIN unit.
2) Turn the superimpose switch on.
3) Adjust the **LEVEL** control so that the character, etc. to be superimposed is inserted clearly. (Check on the preview monitor.)
4) If the **FADE/CUT** switch is kept in the FADE position, the character, etc. will be inserted slowly when the superimpose **ON/OFF** switch is turned ON. (Auto fade-in)

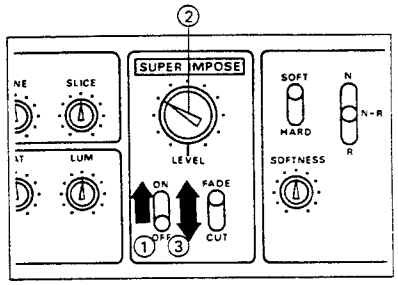


Fig. 1-23

Note: 1) Titles to be superimposed should consists of white characters on a black background. White characters should be solid white.

2) Do not change the position of the FADE/CUT switch while the superimpose switch is set to ON.

3) When wiping the superimposed video, the above methods do not apply.
Input the signal to be superimposed to the EXT-KEY input and BACKGROUND COLOR signal as an inserted KEY signal, then wipe it. The title to be superimposed should be in WHITE characters on a black background.

5. D.S.K. (downstream keyer) operations

It is possible to insert a character or graphics from a B/W camera or character generator into the MIX output and to color the inserted character, etc.

1) Connect the B/W camera or character generator, etc. to the D.S.K input of the MAIN unit.
2) Set the **NEGA/POSI** switch on the control unit.
   - For white characters on a black background – set to **POSI**
   - For black characters on a white background – set to **NEGA**
3) Adjust the **SLICE** and **LEVEL** control so that a clear picture is observed on the **DSK PREVIEW** monitor.
4) To color the character, etc.
   - Select the color with the **HUE** control.
   - Adjust the color saturation with the **SAT** control.
   - Adjust the luminance with the **LUM** control.
5) When there is only a slight difference in luminance between the MIX output (combination between A, B and C inputs) and the D.S.K signal, turn on the **EDGE** switch for easy visibility.

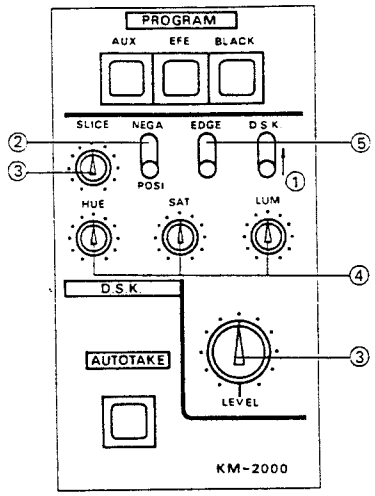


Fig. 1-24

6) To effect the fade in, turn the **LEVEL** control fully counterclockwise, then, after turning the D.S.K switch on, turn it gradually clockwise.

Note:

(1) The signal from the Opaque camera (B/W) used for superimposing or D.S.K input should be Gen-Locked to that in the KM-2000 by using SYNC PULSE output. The sync signal fed to the B/W camera should be from the HD, VD or SYNC terminals on the rear panel of the MAIN unit depending on the camera. The length of the camera cable should be 5 m or less.

(2) When color the inserted characters or graphics, interference fringe by Sub-Carrier appears inserted boundary part on the monitor screen. However this phenomenon is not fault.

18. 19

1.9.2 SECONDARY FUNCTIONS

1. WIPE MODES

1) **SOFT/HARD** function
Switching the **SOFT/HARD** switch provides the following wipe effects.

1. **SOFT:** The boundary of the wipe is soft. The degree of softness can be varied with the **SOFTNESS** control.
2. **HARD:** The boundary of the wipe is sharp.

2) **NORMAL/REVERSE** function
By sliding the **MIX/SE** lever, the amount of wipe can be varied.
If the **N/R** switch is set to N, the pattern is always wiped in the same direction, whether the lever is moved up or down.
If the **N/R** switch is set to R, the wipe is always in the same direction, opposite to that with the switch set to N.
When the switch set to the N-R position (Normal-Reverse) wipes are in alternate directions.

Notes: 1. Slide the **MIX/SE** lever all the way to the A or B position. If it is moved to the opposite end during operation, all of these features operate as if the N-R (Normal-Reverse) position were selected.
2. The wipe pattern should be selected with the **MIX/SE** lever in the A or B position.

Cautions on WIPE operations
1. **When the POSITIONER switch is ON, the Normal/Reverse function does not operate.**
2. **When turning on the POSITIONER switch, do so with the MIX/SE lever slid all the way to the A or B position.**
When the POSITIONER switch is turned ON with the MIX/SE lever midway, the edge of the screen in which the wiping pattern is inserted appears (▭) depending on the position of the POSITIONER.

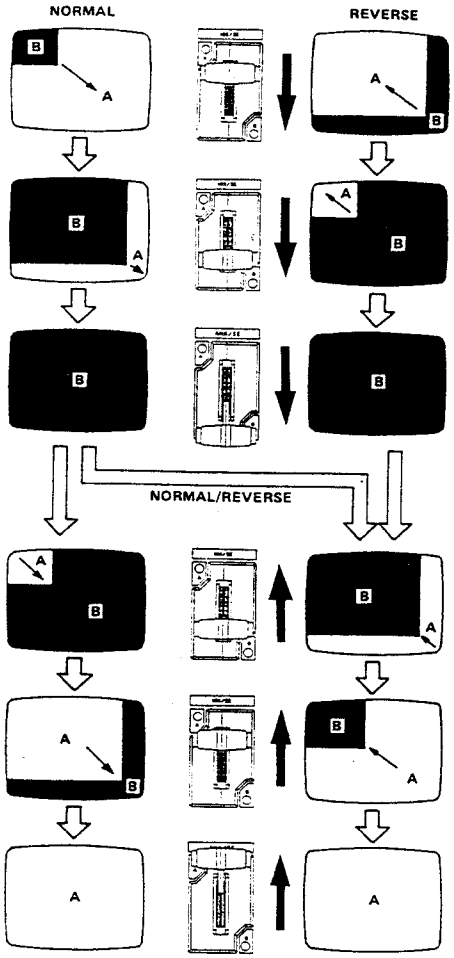


Fig. 1-25

(The wipe pattern used is ▬ .)

3) Wipe Positioning
Switch on the POSITIONER switch. Now, when the positioner joystick is operated, the center of the wipe pattern (▬ ◆ ●) is moved.

Notes: 1) Each of these wipe patterns has a different effect. Use them only after checking on the preview monitor.
2) When the POSITIONER switch is off, the wipe is at the center of the screen regardless of joystick position.
3) When increasing the amount of wipe, at a certain point, the edge of wipe pattern will be clipped. And so, wipe positioner should be used before this effect.

4) Wipe pattern modulation
If an audio signal (600 Ω/0 dB) is input to the EXT. MOD terminal on the rear of the MAIN unit while wiping the A and B inputs, the wipe pattern is modulated horizontally.

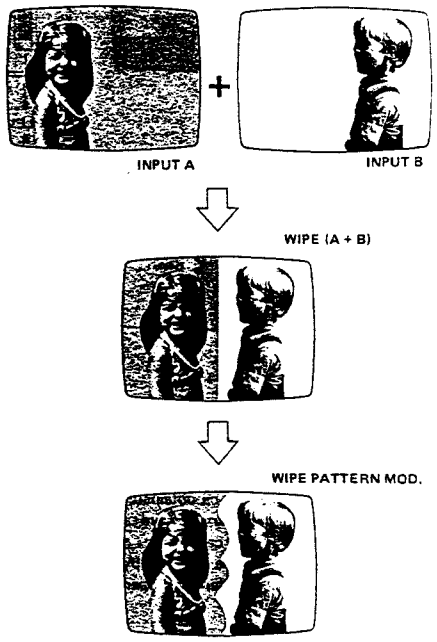


Fig. 1-26

(The wipe pattern used is ■ .)

Notes: 1) The wipe pattern can only be modulated in the horizontal direction. Even at high modulation frequencies, the vertical wipe pattern is not affected.
2) Wipe modulation amplitude is varied by an input audio signal level.

5) Color background
This to generate colors which fill the screen using the internal color signal generator.

1. Turn on the COLOR switch, then select one of the "COLOR" buttons on input A, B or C bus-line; monitor using the PGM output.
2. Select the color using the following controls.
HUE . . . . . Select the desired color
SAT . . . . . Adjust color saturation
LUM . . . . . Adjust luminance
3. The signal is set to each **COLOR** position of A, B and C bus-lines.

Note: Turning down the LUM control too much when the chroma component is high may cause problems with the other components in the system. When generating dark colors, be careful to observe the waveforms with a monitor.

Be careful that the chroma signal does not drop below the lower edge of the burst signal.

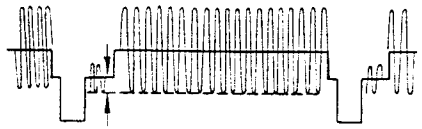


Fig. 1-27

2. PROGRAM SELECT

This selects the final output from the KM-2000.

EFF (line out): Signals including special effects generated by the KM-2000 are output.
BLACK (black signal): A black signal with 7.5% set-up is output.
AUX (auxiliary): This is used to output the input signal from a VTR, etc.

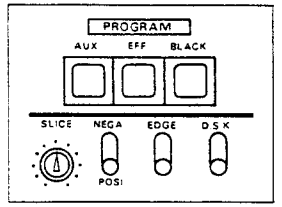


Fig. 1-28

Note: When switched from **BLACK** to **EFF**, the picture fades in from black; when switched from **EFF** to **BLACK**, the picture fades out.

20 21

3. KEYING (CHROMA KEY/EXT KEY)

This allows keying of pictures from the **INPUT A** and **INPUT B** bus-lines with graphics input via the EXT-KEY terminal. And because of the built-in chroma key signal generator, a chroma key effect can be obtained by feeding the R, G, B signal to the CHROMA KEY INPUTS.

Use the CHROMA KEY input as follows:

Preparations:

- Set the WIPE mode selector to **MIX/KEY**.
- Input the chroma key signal from the color camera (key camera) to the required VIDEO INPUT 1–8. Select the input picture with **INPUT A** and **INPUT C** bus-lines switches. (Check on the monitor.)
- Key with **INPUT B** bus-line to select the picture you want to insert.
- Slide down the **MIX** lever to the C position.

1) Set the CHROMA KEY **ON/OFF** switch to "ON", the set the **CHROMA/EXT** switch to CHROMA.

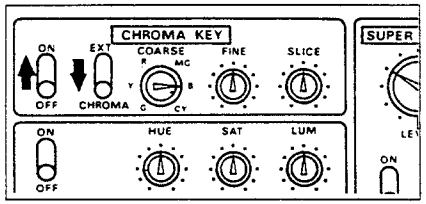


Fig. 1-29

2) Press the **"SE"** button of **PREVIEW** bus-line then slide the **MIX/SE** lever to A.

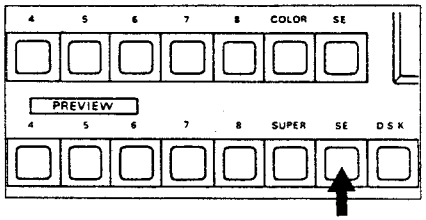


Fig. 1-30

3) Adjust the color of the part of the key camera picture you are going to eliminate by chroma keying with the **COARSE** control.
4) Watching the preview monitor, adjust the **SLICE** and **FINE** controls so that the keying effect is satisfactory.
5) Slide the **MIX** lever slowly to MIX/SE or press the **AUTOTAKE** switch.
6) When using the **MIX** lever, only the chroma keyed portion of the key camera picture dissolves into **INPUT B** bus-line picture. When using the **AUTO-TAKE** switch, the former cuts into the latter.

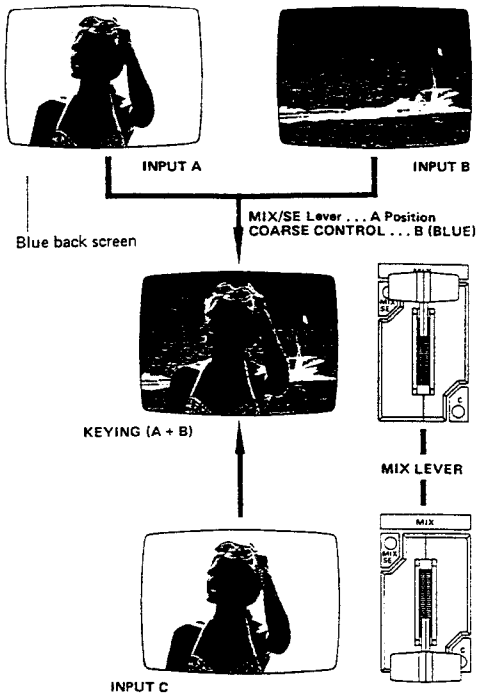


Fig. 1-31

Note: Instead of operating the **MIX/KEY** button, if the KM-2000 is set to the WIPE MODE and the **MIX/SE** lever is used, a variety of effects using the KEY signal can be obtained. For example, if there is an unnecessary picture at the corner of the screen which cannot be removed by chroma keying it can be removed by selecting the appropriate wipe pattern and operation of the **MIX/SE** lever.

4. EXTERNAL KEYING

Set the **CHROMA/EXT** switch to **"EXT"**, then adjust the **SLICE** control so that clear keying is performed using the graphics input to EXT-KEY.
The part of the picture with the key signal (positive polarity) will be **INBUT B** picture and the part without the key signal will be **INPUT A** picture.

Note: When the **POSITIONER** is used, the edge of the keyed picture is clipped depending on the position of the POSITIONER.

1.10 TALLY AND INTERCOM CONNECTIONS

1. TALLY CONNECTION

In a system with a number of cameras, it is necessary for the camera operators and performers to know which camera is being used at any time; this is done using the tally signal.

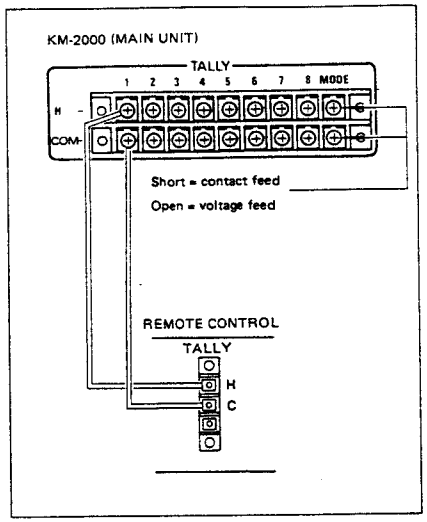


Fig. 1-32

- Contact and voltage feed can be selected by shorting or opening H and GND of the right end terminal (MODE) of the the TALLY output terminal strip.
  Contact feed: 60 V AC/DC, 100 mA max.
  Voltage feed: 5 V DC, 10 mA mix.
  Be careful not to exceed these values.
- Match the TALLY output signal with the mode required by the remote control unit.

CAUTION
The KM-2000 video systems, where the RS-2000 and RS-1900 are combind, must provide "VOLTAGE" tally control signals to them.

2. INTERCOM CONNECTION

When using a number of cameras together with the KM-2000, it is necessary that the operators of the various equipment should be able to communicate with one another. The INTERCOM facility makes this possible.

- Connect the INTERCOM terminal of the MAIN unit with the other equipment (remote control) as shown.

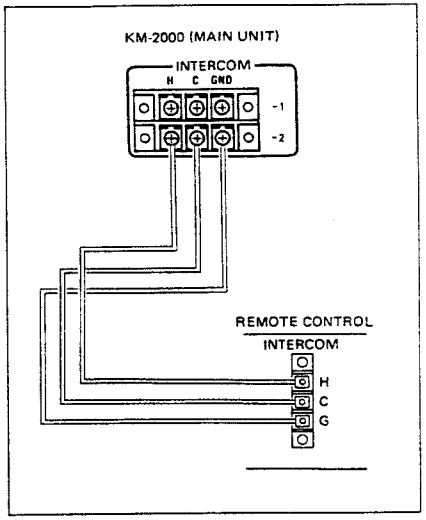


Fig. 1-33

- Intercommunication is possible by plugging a headset into the INTERCOM jack on the front of the MAIN unit. Headsets used should have carbon microphones (10 – 30 ohms) and magnetic earphones (200 – 300 ohms).
- There are three INTERCOM jacks and level controls which can be adjusted independently.

1.11 BLOCK DIAGRAM (MAIN UNIT)

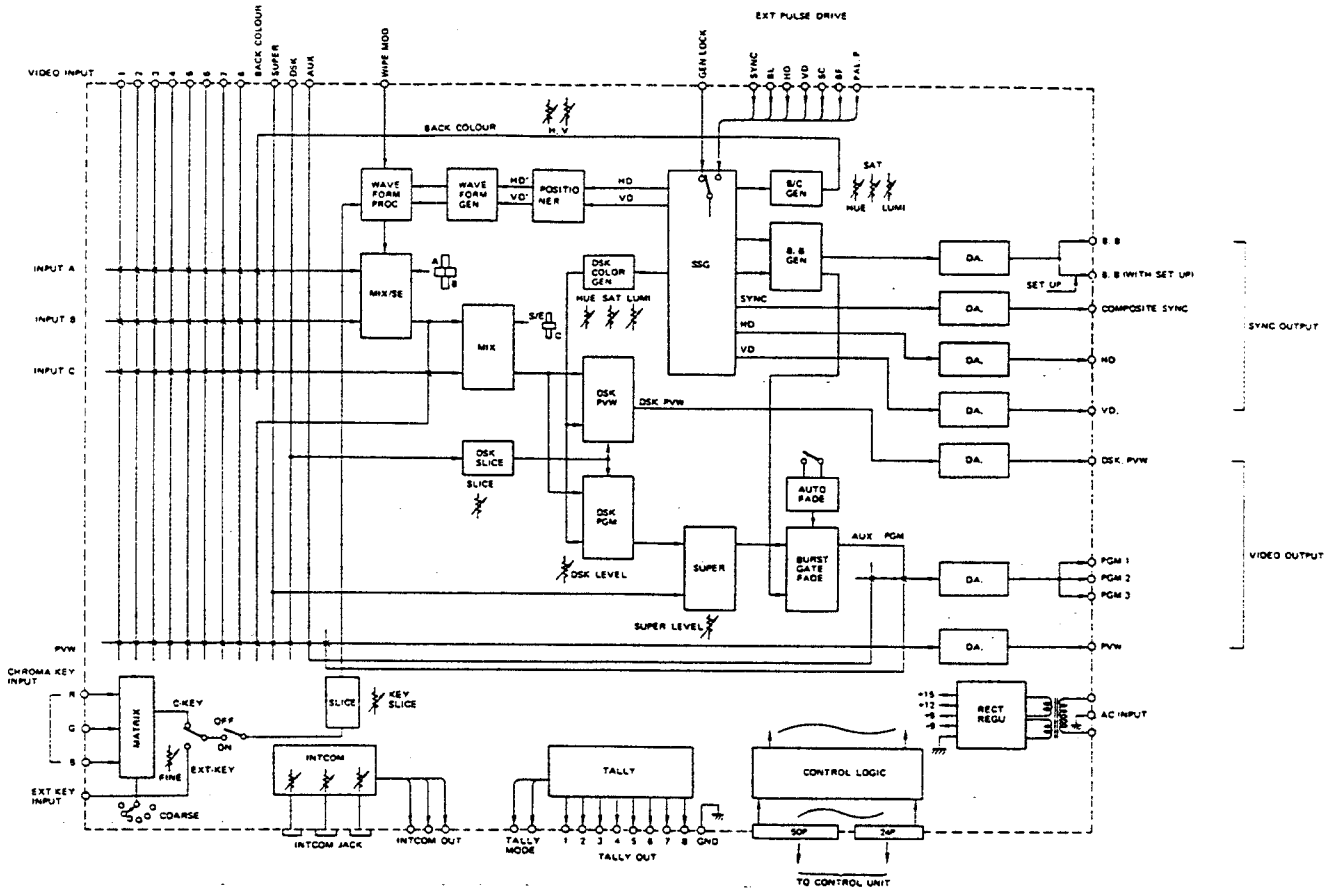


Fig. 1-34

SECTION 2
DISASSEMBLY

2.1 BEFORE DISASSEMBLING

2.1.1 Replacement of main fuses

Remove the top oanel referring to Sec. 2.2.3 Removal of Top Cover.

Note: Remove AC mains plug and check the cause of fuse blown before fuse replacement.

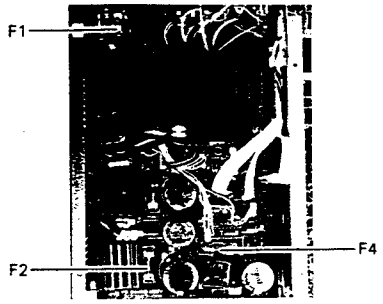


Fig. 2-1

	NTSC version		PAL version	
	Line voltage	Fuse	Line voltage	Fuse
F1	120 V AC	QMF51U1-1R6 (1.6 A/125 V)	220 V/240 V AC	QMF51A2-R80 (T0.8 A/250 V)
F2	+15 V DC	QMF51U1-1R6 (1.6 A/125 V)	+15 V DC	QMF51A2-1R6 (T1.6 A/250 V)
F4	+5 V DC	QMF51U1-1R6 (1.6 A/125 V)	+5 V DC	QMF51A2-1R6 (T1.6 A/250 V)

Note: Replace only with same type and rated fuses for continued protection against risk of fire.

Table 2-1

2.1.2 Removal of knobs

1. Small knob

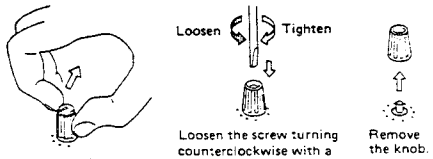


Fig. 2-2 (a)

2. Large knob

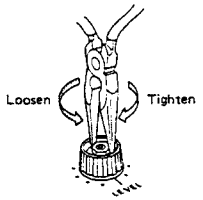
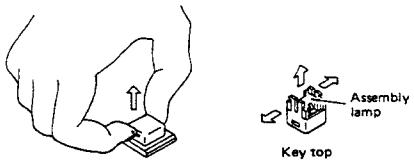


Fig. 2-2 (b)

2.1.3 Replacement of assembly lamps



Pull off the key top with a finger tip or a screwdriver by inserting its tip into the key slot.

Remove the assembly lamp out of the key top then insert a new lamp as before.

Fig. 2-3

2.1.4 Card fit cable connection

Note for conductors side on both of card cable and connector to mate.

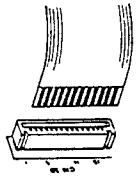


Fig. 2-4

2.2 DISASSEMBLY OF THE MAIN BOARD

2.2.1 Removal of the front panel

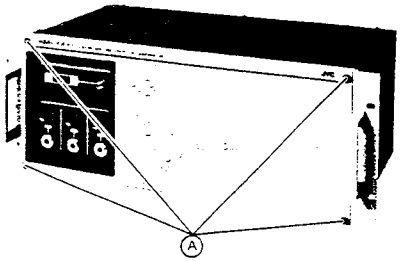


Fig. 2-5

Loosen four screws (A) of the front panel and remove the panel.

2.2.2 Removal of VIDEO, CP, WFP, BC, SG boards

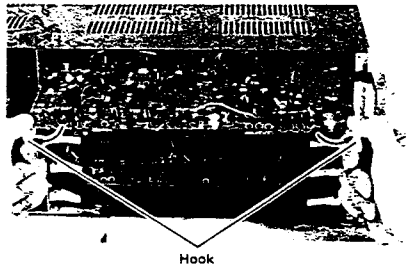


Fig. 2-6

Release the hooks (turn to front) on the both sides of the board simultaneously and pull out the board.

2.2.3 Removal of the top cover

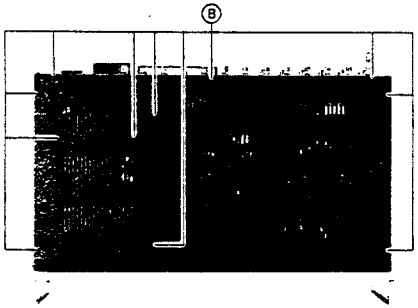


Fig. 2-7

Remove the eleven screws (B).

2.2.4 Removal of the MB (Mother Board)

1. Remove the connector on the Mother board.

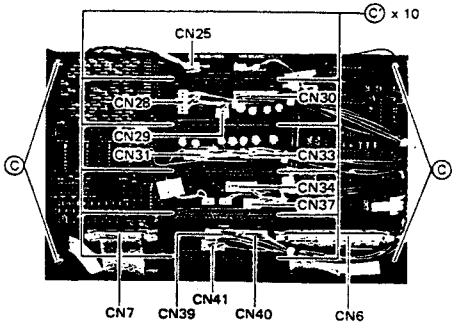


Fig. 2-8

2. Remove fourteen screws (C) and pull the Mother Board to front.

2.2.5 Removal of the rear panel

1. Remove the three screws (D) on the bottom plate.

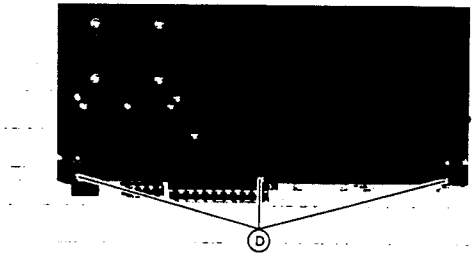


Fig. 2-9

2. Remove the six screws (E) on the rear panel.

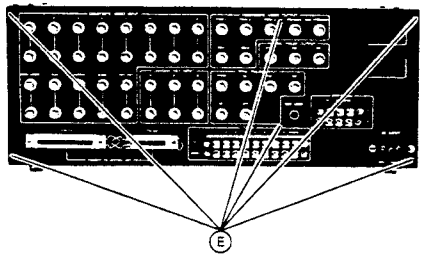


Fig. 2-10

3. Pull the rear panel to backward and remove CN42 and CN43.

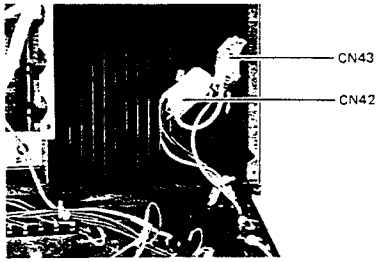


Fig. 2-11

2.2.6 Removal of the Fuse board

Remove the two screws (F).

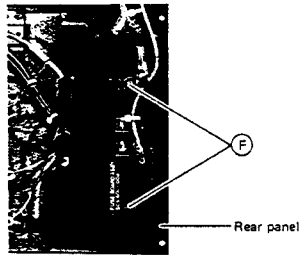


Fig. 2-12

2.2.7 Removal of TL (Tally) board

1. Remove CN1, 9, 10 on the TL board.

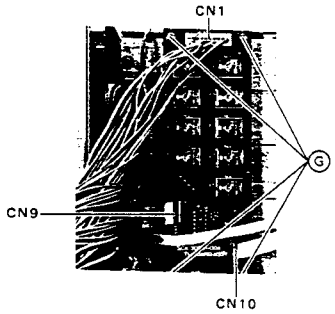


Fig. 2-13

2. Remove the four screws (G) and remove the TL board.

2.2.8 Removal of the handle

1. Remove the screws (H) and pull the handle with its fixing bracket together in the direction of the arrow mark.

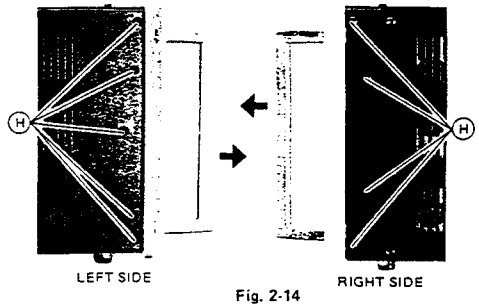


Fig. 2-14

2. Remove the two screws (I).

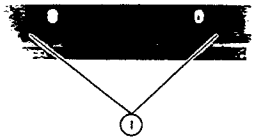


Fig. 2-15

2.2.9 Disassembly of the sub panel and removal of IT (INTERCOM) board

1. Remove the two screws (J).

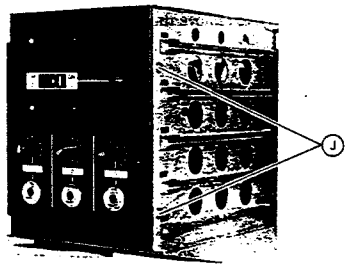


Fig. 2-16

2. Remove CN44 on the PS board and CN18 and 19 on the IT board.

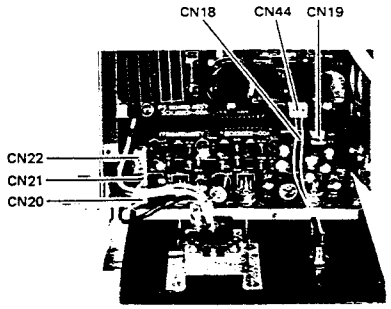


Fig. 2-17

3. Remove the knobs of INTERCOM level control.

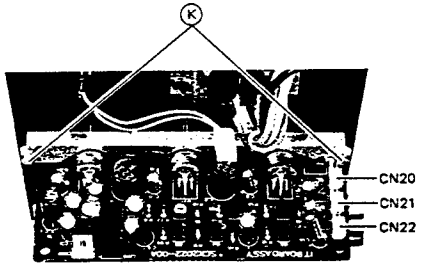


Fig. 2-18

4. Remove CN20, 21 and 22 on the IT board and the two screws (K) to remove the IT board.

2.2.10 Removal of PS (POWER SUPPLY) board

1. Remove the five screws (L1) to remove the side panel.

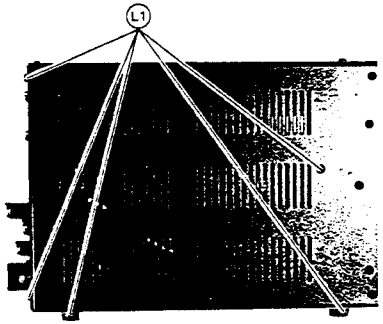


Fig. 2-19

2. Remove CN13, 14, 15, 16, 17 and 18 on the PS board.

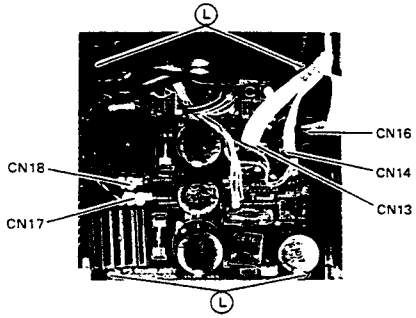


Fig. 2-20

3. Remove the four screws (L).

2.2.11 Removal of Q1, Q2, IC2 and Q3

1. Remove the five screws (M) on the bottom plate.

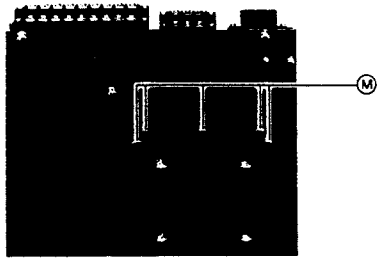
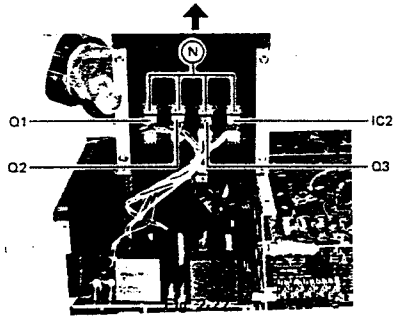


Fig. 2-21

2. Remove the heat sink plate upwards.



3. Remove the screw (N) corresponding to a transistor or IC to be replaced, then remove the transistor or IC.

2.2.12 Removal of the power transformer PT01

1. Remove the four screws (O) on the bottom plate.

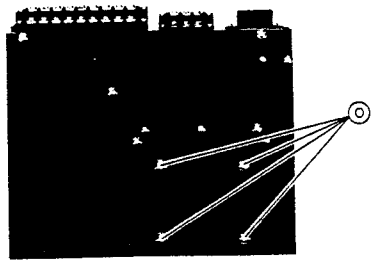


Fig. 2-23

2. Remove the power transformer upwards.

Fig. 2-24

2.3 DISASSEMBLY OF THE CONTROL BOARD

2.3.1 Removal of the bottom cover

1. Loosen and remove the seven screws (A).

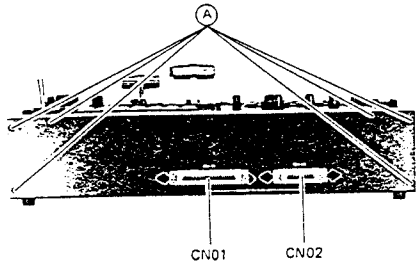


Fig. 2-25

2. Remove the five screws (B).

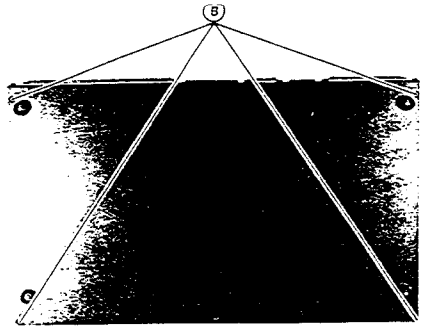


Fig. 2-26

3. Open the bottom cover of the control board as shown in Fig. 2-27.

Fig. 2-27

When adjusting and checking up control unit, all are proceeded on this condition.

REMOVAL OF CONTROL CONNECTORS

Control cable connectors (CN01, CN02) can be provided on the bottom of unit as well.

1. Remove the coverplate on the cottom of unit.
2. Remove the flat cable of CN01 and CN02 on the LB board.
3. Remove the CN01 and CN02 connectors.
4. Mount the CN01 and CN02 on the bottom, and connect flat cables to LB board.

4. Remove CN21, 22, 23, 24, 16, 17, 18, 19 and 20, and CN01 and CN02.

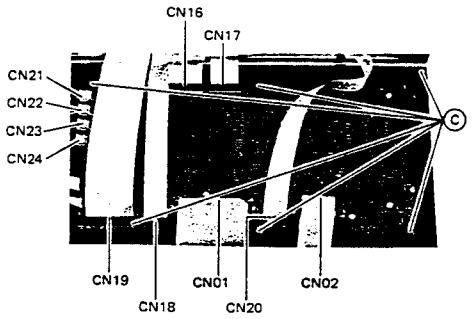


Fig. 2-28

5. Remove the six screws Ⓒ to take out the LB board.

2.3.2 Removal of SB (SWITCH BOARD) - 1

1. Remove the eleven screws Ⓓ.

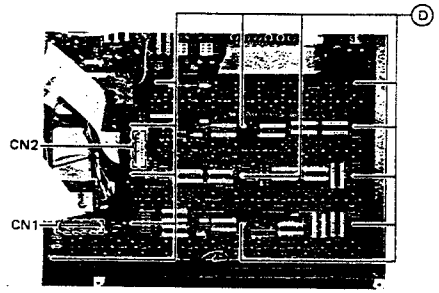


Fig. 2-29

2. Remove CN1 and CN2.

2.3.3 Removal of SB (SWITCH BOARD) - 2 and POS (POSITIONER)

1. Remove the knob of SOFTNESS control on the operation panel.

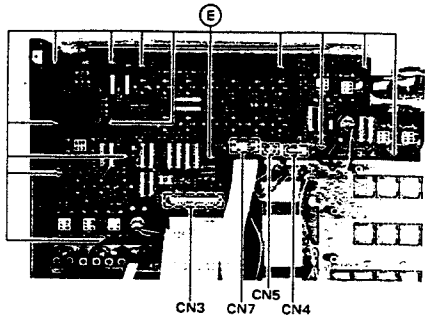


Fig. 2-30

2. Remove CN4, 3, 7, 5 and 4.
3. Remove thirteen screws Ⓔ.

2.3.4 Removal of CK (CHROMA KEY) board

1. Remove the knobs of COARSE, FIN, SLICE and LEVEL on the operation panel.
2. Remove CN8, 9, and 11.

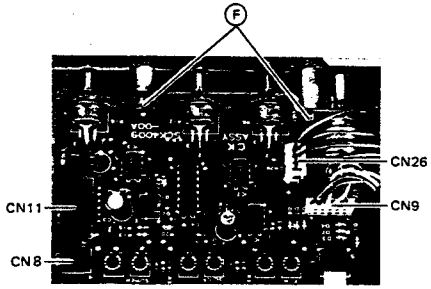


Fig. 2-31

3. Remove the two screws Ⓕ of the CK board.

2.3.5 Removal of SB (SWITCH BOARD) - 3

1. Remove the three screws Ⓖ of the board.

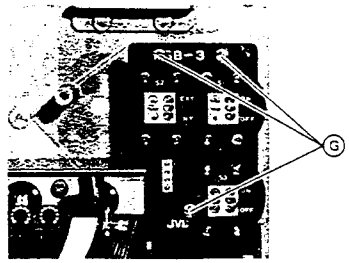


Fig. 2-32

2.3.6 Removal of AU (AUTO TAKE) board

1. Remove the LEVEL control knob from the operation panel side.
2. Remove the four screws Ⓗ and CN11, then remove the AU board.

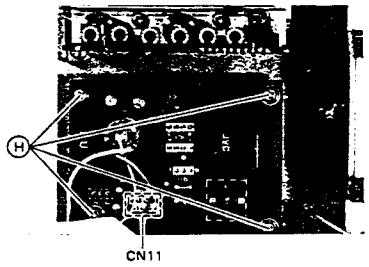


Fig. 2-33

2.3.7 Removal of DS DOWNSTREAM KEYER board

1. Remove three knobs of the DSK P.W.B. from operation panel side.

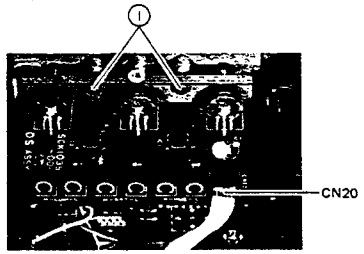


Fig. 2-34

2. Remove the two screws Ⓘ and CN20, then remove the DS board.

2.3.8 Removal of BCC (BACK COLOR CONTROL) board

1. Remove the knobs of HUE, SAT. and LUM of the BCC P.W.B. from operation panel side.
2. Remove the two screws Ⓙ.

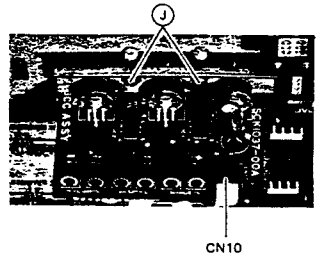


Fig. 2-35

3. Remove CN10 and remove the BCC board.

2.3.9 Removal of FADER mechanism

1. Remove the two nuts Ⓐ on the bottom side.
2. Pull out the mechanism upwards.

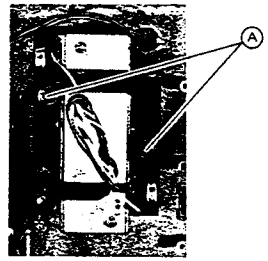


Fig. 2-36

2.3.10 Removal of FADER VR

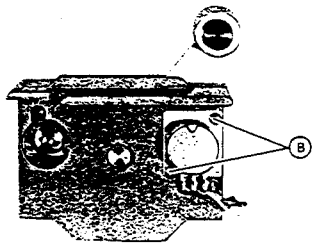


Fig. 2-37

1. Remove the two screws Ⓑ and pull the VR backward.

30 31

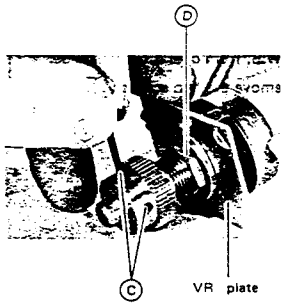


Fig. 2-38

2. Loosen the screw Ⓒ with a hex-wrench and remove the gear. Then, loosen the nut Ⓓ on the VR plate.

- **Adjustment of FADER VR**

1. Loosen the two screws Ⓐ to remove the cover.

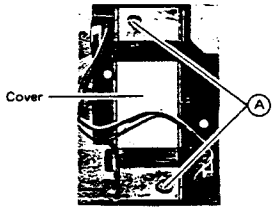


Fig. 2-39

2. Loosen the two screws with a hex-wrench.

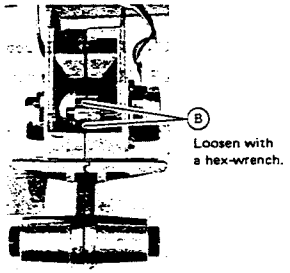


Fig. 2-40

3. Adjust the position using a flat blade screwdriver, and fix the VR with a hex-wrench after adjustment.

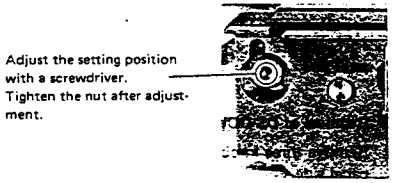
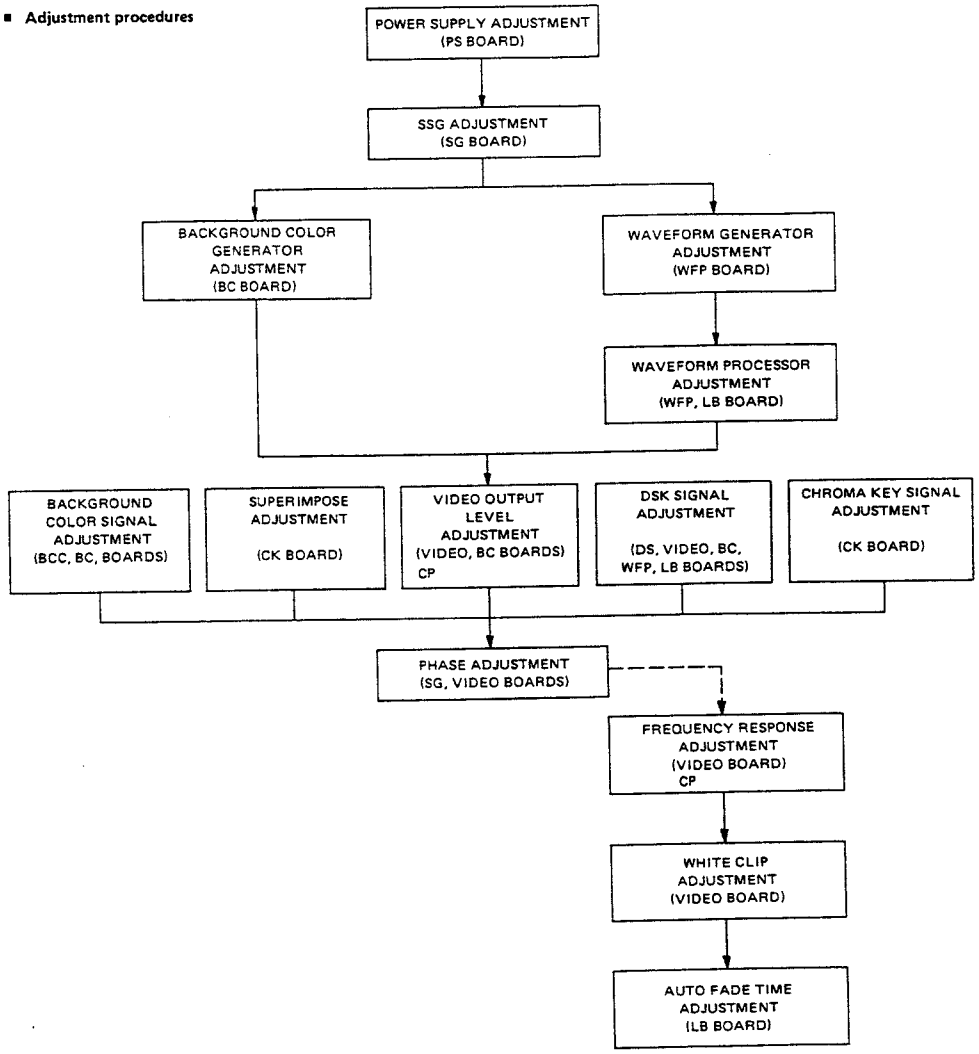


Fig. 2-41

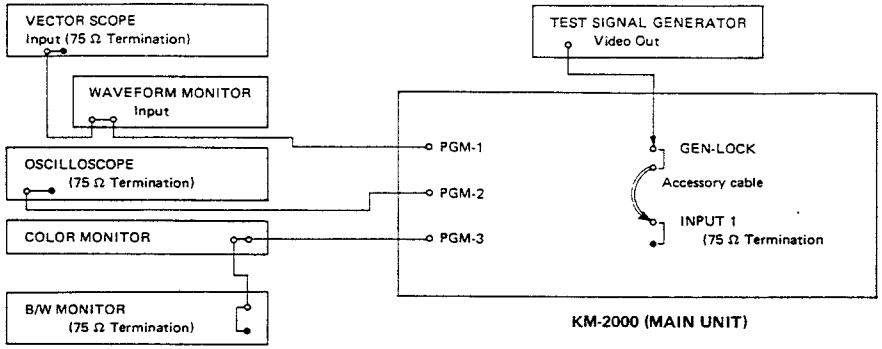
SECTION 3
ADJUSTMENT

- **Adjustment procedures**



3.1 TEST EQUIPMENTS AND CONNECTION FOR ADJUSTMENT

- Digital Voltmeter or V.T.V.M.
- Dual Trace Oscilloscope (Tektronix 465B, etc.)
- Test Signal Generator (with Stair-step, Window, White, Cross-hatch generators)
- Frequency Counter
- Vectorscope (Tektronix 1420, etc.)
- Waveform Monitor (Tektronix 528, etc.)
- Color Monitor (Under-scanning is recommended.)
- Black and White Monitor (Under-scanning is recommended.)
- Extender Board (Part No. SCK1044)



1 POWER SUPPLY ADJUSTMENT

1-1 Regulator adjustment (+15 V, +9 V)

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-1 (PS BOARD)	R15 +15 V ADJ (PS BOARD)	+15 V ± 0.1 V	Digital voltmeter
	TP-2 (PS BOARD)	R8 +8 V ADJ (PS BOARD)	+9 V ± 0.1 V	

■ **Adjustment procedures**

(1) Connect a digital voltmeter ⊕ to TP-1 of PS BOARD and ⊖ to chassis.
Adjust R15 (+15 V ADJ) on PS BOARD so that the reading is +15 V.

(2) Connect a digital voltmeter to TP-2 of PS BOARD.
Adjust R8 (+9 V ADJ) on PS BOARD so that the reading is +9 V.

2 SSG ADJUSTMENT (SYNC SIGNAL GENERATOR)

Before starting adjustments, move the SG board to the outside by using the PWB extender provided to adjust it.

2-1 SSG master oscillation frequency (f_{sc}) adjustment

■ **Adjustment point**

Input signal	Test point	VR		Signal level	Measuring instrument
–	TP-4 (SG BOARD)	NTSC	C60 SC FREQ. (SG BOARD)	3.579545 MHz ± 5 Hz	Frequency counter
	TP-6 (SG BOARD)	PAL	C67 SC FREQ. (SG BOARD)	4.43361875 MHz ± 5 Hz	

■ **Adjustment procedures**

NTSC
(1) Connect a frequency counter to TP-4 on the SG BOARD.
(2) Adjust SC FREQ trimming capacitor (C60) so that the reading is 3.579545 MHz ± 5 Hz.

PAL
(1) Connect a frequency counter to TP-6 on the SG BOARD.
(2) Adjust SC FREQ trimming capacitor (C67) so that the reading is 4.43361875 MHz ± 5 Hz.

2-2 SYNC level adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-1 (SG BOARD BASE)	R44 SYNC LEVEL (SG BOARD BASE)	4 Vp-p ± 0.2 V	Oscilloscope: H-rate, 20 μs (75 Ω termination)

■ **Adjustment procedures**

(1) Connect an oscilloscope to TP-1 on SG BOARD BASE (75 Ω termination).
(2) Adjust R44 (SYNC LEVEL) so that a voltage of 4 Vp-p ± 0.2 V is obtained as shown in Fig. 2-1.

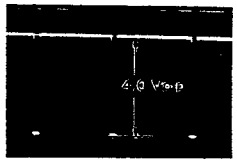


Fig. 2-1

2-3 H.D. pulse level adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-2 (SG BOARD BASE)	R53 HD LEVEL (SG BOARD BASE)	4.0 Vp-p ± 0.2 V	Oscilloscope: H-rate, 20 μs (75 Ω termination)

■ **Adjustment procedures**

(1) Connect an oscilloscope to TP-2 on SG BOARD BASE (75 Ω termination).
(2) Adjust R53 (HD LEVEL) so that a voltage of 4 Vp-p ± 0.2 V is obtained as shown in Fig. 2-2.

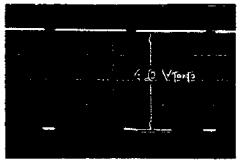


Fig. 2-2

2-4 V.D. pulse level adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-3 (SG BOARD BASE)	R62 VD LEVEL (SG BOARD BASE)	4.0 Vp-p ± 0.2 V	Oscilloscope: V-rate, 5 ms (75 Ω termination)

■ **Adjustment procedures**

(1) Connect an oscilloscope to TP-3 on SG BOARD BASE.
(2) Adjust R62 (VD LEVEL) so that a voltage of 4 Vp-p ± 0.2 V is obtained as shown in Fig. 2-3.

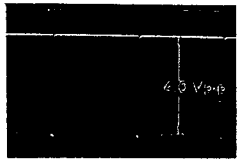


Fig. 2-3

2-5 H-blanking pulse width adjustment (NTSC only)

■ **Adjustment point**

Input signal	Test point	VR	Signal level		Measuring instrument
			NTSC	PAL	
–	CN 1 Pin ⑫ (SG BOARD BASE)	R102 H-BLANKING (SG BOARD)	10.5 ± 0.2 μs		Oscilloscope: H-rate, 10 μs

■ **Adjustment procedures**

(1) Connect an oscilloscope to pin ⑫ of CN1 on SG BOARD BASE.
(2) Adjust R102 (H-BLANKING) so that the pulse width is 10.5 ± 0.2 μsec as shown in Fig. 2-4.

Fig. 2-4

2-6 H. phase adjustment

■ **Adjustment point**

Input signal	Test point	VR		Signal level	Measuring instrument
Stair-step Signal (Test Signal Generator)	TP-1 (SG BOARD)	NTSC	R81 H. PHASE (SG BOARD)	–	Oscilloscope: H-rate, 10 μs
		PAL	R125 H. PHASE (SG BOARD)	–	

■ **Adjustment procedures**

(1) Supply a stair-step signal to input 1 connector through GEN-LOCK input.
(2) Connect an oscilloscope A-ch to stair-step signal and B-ch to PGM-1 connector.
(3) Adjust the above VR so that the input level and output level are the same.

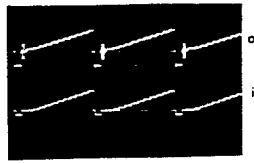


Fig. 2-5

2-7 EXT. SC level adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
SC signal	CN-1 Pin⑤ (SG BOARD)	R29 EXT SC LEVEL (SG BOARD BASE)	0.6 ± 0.1 Vp-p	Oscilloscope

■ **Adjustment procedures**

(1) Connect an oscilloscope to pin ⑤ of CN1 on SG BOARD.
(2) Provide an SC signal (2 Vp-p) from EXT. MASTER SSG to SC input.
(3) Adjust R29 (EXT. SC LEVEL) so that the SC amplitude is 0.6 Vp-p ± 0.1 V as shown in Fig. 2-6.

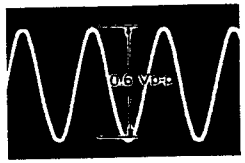


Fig. 2-6

3 BACKGROUND COLOR GENERATOR ADJUSTMENT

Before starting adjustments, move the BC board to the outside by using the PWB extender provided to adjust it.

3-1 Carrier balance adjustment

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	BB-2 (OUTPUT)	R20, R85 C-BAL (BC BOARD)	–	Oscilloscope: H-rate, 20 μs

■ Adjustment procedures

(1) Connect an oscilloscope to BB-2 of MAIN unit via a 75-ohm load resistor (75 Ω termination).
(2) Then simultaneously adjust R20 and R85 to minimize the carrier leak of black level as shown in Fig. 3-1.

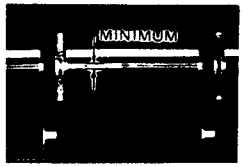


Fig. 3-1

3-2 BF, SYNC, SET-UP level adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level NTSC	Signal level PAL	Measuring instrument
–	BB-2 (OUTPUT)	R11 BF LEVEL (BC BOARD)	0.286 Vp-p	0.3 V	Oscilloscope: H-rate, 20 μs (75 Ω termination)
		R94 SYNC LEVEL (BC BOARD)	0.286 Vp-p	0.3 V	
		R100 SET-UP (BC BOARD)	53.5 mVp-p		

■ Adjustment procedure

(1) Adjust R11 (BF LEVEL) for burst level. (Fig. 3-2)
(2) Adjust R94 (SYNC LEVEL) for sync level. (Fig. 3-2)
(3) Adjust R100 (SET-UP) for set-up level. (Fig. 3-2)

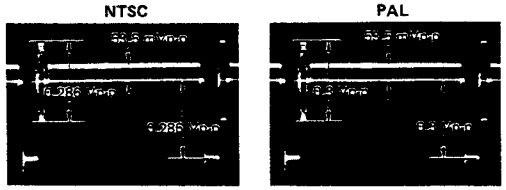


Fig. 3-2

3-3 BC SYNC level adjustment

■ Adjustment procedures

Input signal	Test point	VR	Signal level NTSC	Signal level PAL	Measuring instrument
–	TP-3 (BC BOARD)	R96 BC SYNC (BC BOARD)	0.286 Vp-p	0.3 Vp-p	Oscilloscope: H-rate, 20 μs

■ Adjustment procedure

(1) Connect an oscilloscope to TP-3 on BC BOARD.
(2) Adjust R96 (BC SYNC) for SYNC level as shown in Fig. 3-3.

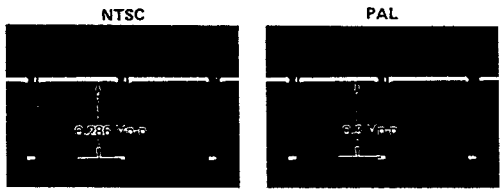


Fig. 3-3

3-4 CP WIDTH adjustment

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-1 (BC BOARD)	R46 CP WIDTH (BC BOARD)	2.5 ± 0.1 μs	Oscilloscope: H-rate, 10 μs

■ Adjustment procedures

(1) Connect an oscilloscope to TP-1 on BC BOARD.
(2) Adjust R46 (CP WIDTH) so that the width is 2.5 ± 0.1 μs as shown in Fig. 3-4.

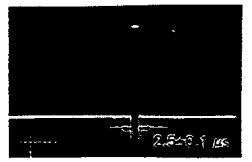


Fig. 3-4

3-5 N. BLANKING adjustment

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	IC22 Pin ③ (BC BOARD)	R45 NBL WIDTH (BC BOARD)	10 ± 0.2 μs	Oscilloscope: H-rate, 10 μs

■ Adjustment procedure

(1) Connect an oscilloscope to pin ③ of IC22 on BC BOARD.
(2) Adjust R45 (NBL WIDTH) so that the N. blanking width is 10 ± 0.2 μs as shown in Fig. 3-5.

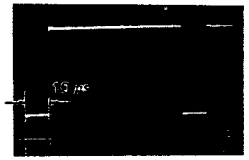


Fig. 3-5

3-6 BF PHASE adjustment (PAL Model only)

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	BB-2 (OUTPUT)	R14, R72 BF PHASE (BC BOARD)	–	Vectorscope

■ Adjustment procedure

(1) Connect a vectorscope to BB-2 of MAIN unit via a 75-ohm load resistor.
(2) Adjust R14 (BF PHASE) so that the phase is specified position as shown in Fig. 3-6.
(3) Adjust R72 (BF PHASE) for quadrature as shown in Fig. 3-6.

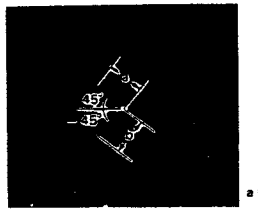


Fig. 3-6

4. WAVEFORM GENERATOR ADJUSTMENT

Before starting adjustments, move the WFP board to the outside by using the PWB extender provided to adjust it.

4-1 H. signal adjustment

4-1-1 H. phase adjustment

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-1 (WFP BOARD)	R3 H. PHASE (WFP BOARD)	37 μs	Oscilloscope: H-rate, 10 μs

■ Adjustment procedure

(1) Observe the TP-1 on the WFP BOARD and HD output (Rear of MAIN UNIT) with a dual trace oscilloscope and adjust R3 (H. PHASE) so that the rise timing is 37 μsec.

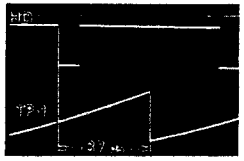


Fig. 4-1

4-1-2 POSITIONER H. SAWTOOTH amplitude adjustment

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-1 (WFP BOARD)	R9 H-SAW-POS (WFP BOARD)	3.0 Vp-p	Oscilloscope: H-rate, 20 μs

■ Adjustment procedures

(1) Connect an oscilloscope to TP-1 on WFP BOARD.

(2) Adjust R9 (H-SAW-POS) so that the amplitude is 3.0 Vp-p.

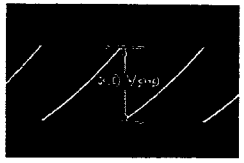


Fig. 4-2

4-1-3 H. SAWTOOTH adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-3 (WFP BOARD)	R30 H-SAW-LEVEL (WFP BOARD)	1.2 Vp-p	Oscilloscope: H-rate, 20 μs
		R27 H-SAW-LIN (WFP BOARD)	–	

■ Adjustment procedures

(1) Connect an oscilloscope to TP-3 on WFP BOARD.

(2) Adjust R30 (H-SAW-LEVEL) so that the sawtooth amplitude is 1.2 Vp-p.

(3) Adjust the linearity with R27 (H-SAW-LIN).

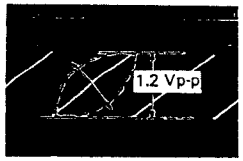


Fig. 4-3

4-1-4 H. PARABORA adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-4 (WFP BOARD)	R34 H-PARA-LEVEL (WFP BOARD)	2.0 Vp-p	Oscilloscope: H-rate, 20 μs
		R31 H-PARA-LIN (WFP BOARD)	a = b	

■ Adjustment procedures

(1) Connect an oscilloscope to TP-4 on WFP BOARD.

(2) Adjust R31 (H-PARA-LIN) so that the peak point is positioned at the center of the parabolic waveform.

(3) Adjust R34 (H-PARA-LEVEL) so that the parabolic waveform peak level is 2.0 Vp-p.

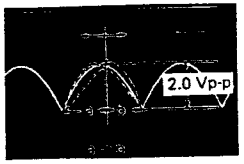


Fig. 4-4

4-1-5 H. TRIANGLE adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-5 (WFP BOARD)	R37 H-TRI-PHASE (WFP BOARD)	a = b	Oscilloscope: H-rate, 20 μs
		R44 H-TRI-LEVEL (WFP BOARD)	0.8 Vp-p	
		R42 H-TRI-LIN (WFP BOARD)	–	

■ Adjustment procedures

(1) Connect an oscilloscope to TP-5 on WFP BOARD.

(2) Adjust R37 (H-TRI-PHASE) so that a equals b as shown in Fig. 4-5.

(3) Adjust R44 (H-TRI-LEVEL) so that the level is 0.8 Vp-p.

(4) Adjust R42 (H-TRI-LIN) so that linear line is obtained.

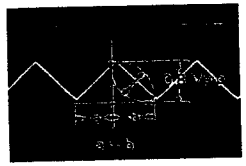


Fig. 4-5

4 4-1

4-1-6 H. INVERSIVE level adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-6 (WFP BOARD)	R52 H-INV-LEVEL (WFP BOARD)	1.2 Vp-p	Oscilloscope: H-rate, 20 μs DC range
		R56 H-INV-BIAS (WFP BOARD)	–	

■ **Adjustment procedures**

(1) In both wipe mode ▀ and ▄, adjust so that the same peak DC level is obtained.

(2) Adjust R52 (H-INV-LEVEL) and R56 (H-INV-BIAS) for p-p and DC levels respectively.

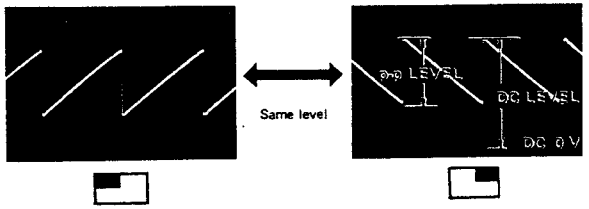


Fig. 4-6

4-1-7 H. DC setting

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
–	C22 ⊖ side (WFP BOARD)	R27 H-SAW-LIN (WFP BOARD)	–	Oscilloscope: H-rate, 20 μs DC range

■ **Adjustment procedures**

(1) Connect an oscilloscope to C22 ⊖ side on WFP BOARD.

(2) In both wipe modes ▀ and ▄, slightly turn R27 (H-SAW-LIN) so that the same peak DC level is obtained.

Note: Slightly turn R27 so that the H sawtooth waveform linearity is not degraded.

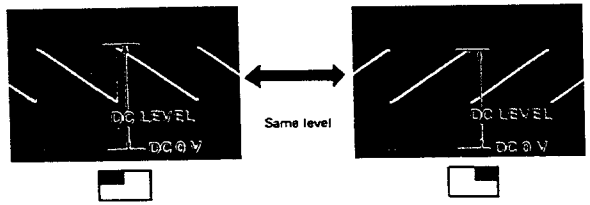


Fig. 4-7

4-2 V. signal adjustment

4-2-1 V. PHASE adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level		Measuring instrument
			NTSC	PAL	
–	TP-7 (WFP BOARD)	R68 V-PHASE (WFP BOARD)	8.0 ms	10.0 ms	Oscilloscope: V-rate, 2 ms

■ **Adjustment procedures**

(1) Connect an oscilloscope A-ch to VD output (Rear of MAIN UNIT) and B-ch to TP-7 on WFP BOARD.

(2) Adjust R68 (V-PHASE) so that the front of the VD signal aligns with the rear of sawtooth waveform as shown in Fig. 4-8.

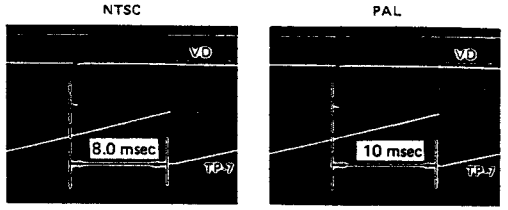


Fig. 4-8

4-2-2 POSITIONER V. SAWTOOTH amplitude adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-7 (WFP BOARD)	R74 V-SAW-POS (WFP BOARD)	3.0 Vp-p	Oscilloscope: V-rate, 5 ms

■ **Adjustment procedures**

(1) Connect an oscilloscope to TP-7 on WFP BOARD.

(2) Adjust R74 (V-SAW-POS) so that the signal level is 3.0 Vp-p. (Fig. 4-9)

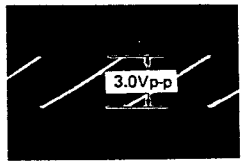


Fig. 4-9

4-2-3 V. SAWTOOTH adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-10 (WFP BOARD)	R97 V-SAW-LEVEL (WFP BOARD)	1.2 Vp-p	Oscilloscope: V-rate, 5 ms

■ Adjustment procedures

(1) Connect an oscilloscope to TP-10 on WFP BOARD.
(2) Adjust R97 (V-SAW-LEVEL) so that the signal level is 1.2 Vp-p.

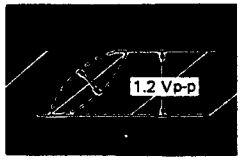


Fig. 4-10

4-2-4 V. PARABORA adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	C46 ⊖ side (WFP BOARD)	R99 V-PARA-LIN (WFP BOARD)	–	Oscilloscope: V-rate, 5 ms
		R101 V-PARA-LEVEL (WFP BOARD)	1.8 Vp-p	

■ Adjustment procedures

(1) Connect an oscilloscope to C46 ⊖ side on WFP BOARD.
(2) Set the unit to wipe mode [●].
(3) Adjust R101 (V-PARA-LEVEL) so that the parabolic waveform peak level is 1.8 Vp-p.
(4) Adjust R99 (V-PARA-LIN) so that the peak point is located at the center.

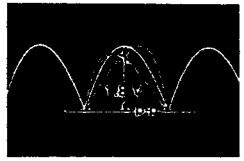


Fig. 4-11

4-2-5 V. TRIANGLE adjustment

■ Adjustment poinst

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-12 (WFP BOARD)	R104 V-TRI-PHASE (WFP BOARD)	a = b	Oscilloscope: V-rate, 5 ms
		R111 V-TRI-LEVEL (WFP BOARD)	1.0 Vp-p	

■ Adjustment procedures

(1) Connect an oscilloscope to TP-12 on WFP BOARD.
(2) Adjust R104 (V-TRI-PHASE) so that a equals b as shown in Fig. 4-12.
(3) Adjust R111 (V-TRI-LEVEL) so that the amplitude is 1.0 Vp-p.

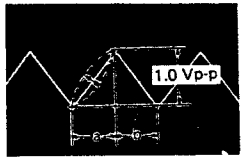


Fig. 4-12

4-2-6 V. INVERSIVE level adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-13 (WFP BOARD)	R119 V-INV-LEVEL (WFP BOARD)	1.2 Vp-p	Oscilloscope: V-rate, 5 ms
		R123 V-INV-BIAS (WFP BOARD)	–	

■ Adjustment procedures

(1) Connect an oscilloscope to TP-13 on WFP BOARD.
(2) In both wipe modes [▀] and [▄], adjust so that the same level is obtained.
Adjust R119 (V-INV-LEVEL) and R123 (V-INV-BIAS) for P-P and DC levels respectively.

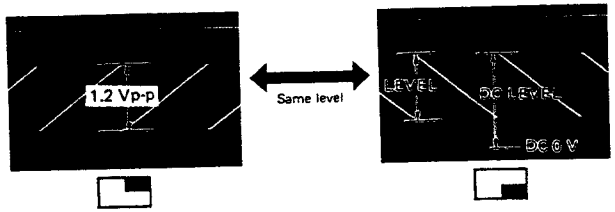


Fig. 4-13

4-2-7 LINEARITY ADJUSTMENT

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	C46 ⊖ side (WFP BOARD)	R94 V-SAW-LIN R110 V-TRI-LIN (WFP BOARD)	–	Oscilloscope: V-rate, 5 ms DC range

■ Adjustment procedures

(1) Connect an oscilloscope to C46 ⊖ side on WFP BOARD.
(2) Select wipe mode [▀] and [▄], adjust R94 (V-SAW-LIN) to compersate THE WAVEFORM LINEARITY.
(3) Select wipe mode [▬], adjust R110 (V-TRI-LIN) to COMPENSATE THE WAVEFORM LINEARITY.

4-3 WIPE LEVEL adjustment

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-14 (WFP BOARD)	R184 WIPE LEVEL (WFP BOARD)	+5.4 V DC	Oscilloscope: H-rate, 10 μs DC range

■ Adjustment procedures

(1) Connect an oscilloscope to TP-14 on WFP BOARD.
(2) Set the unit to wipe mode ◧.
(3) Adjust MIX/SE lever in the control unit so that the waveform is as specified in Fig. 4-15. Adjust R184 (WIPE LEVEL) so that the maximum level is 5.4 V DC.

Note: Set the DC 0 V level with oscilloscope beforehand.

Fig. 4-15

4-4 DSK KEY LEVEL adjustment

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-15 (WFP BOARD)	R250 DSK KEY LEVEL (WFP BOARD)	+7.5 V DC	Oscilloscope: H-rate, DC range

■ Adjustment procedures

(1) Connect an oscilloscope to TP-15 on WFP BAORD.
(2) Set the SLICE knob in the DSK control section of the control panel to minimum.
(3) Adjust R250 (DSK KEY LEVEL) so that the DC level is +7.5 V DC.

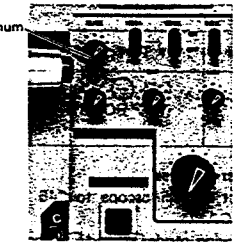


Fig. 4-16

5 WAVEFORM PROCESSOR ADJUSTMENT

Before starting adjustments, proceed as follows.

(1) Move the WFP board to the outside by using the PWB EXTENDER provided to adjust it.
(2) Supply the Test Signal Generator to INPUT 1 connector (rear of MAIN UNIT) through GEN-LOCK INPUT.
(3) Connect an oscilloscope to PGM-1 (rear of MAIN UNIT) and color (B/W) monitor to PGM-2.
(4) Set the unit in WIPE MODE ◧ and turn the positioner switch OFF.
(5) Center the MIX/SE lever and set the MIX lever to MIX/SE (upper).
(6) Set the INPUT A bus-line to "2".
(7) Set the INPUT B bus-line to "COLOR".
(8) Adjust COLOR LUM knob so that INPUT A and B are distinctive in the monitor screen.

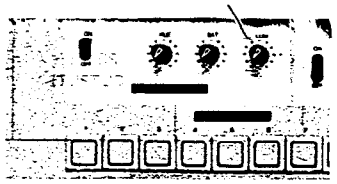


Fig. 5-1

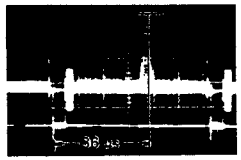
5-1 POSITIONER centering adjustment

■ Adjustment points

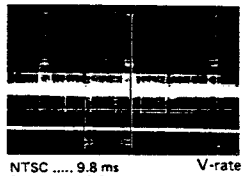
Input signal	Test point	VR	Signal level NTSC	Signal level PAL	Measuring instrument
–	PGM-1 (OUTPUT)	R12 H-POSI (WFP BOARD)	36 μs	36 μs	Oscilloscope: H-rate, 10 μs
		R77 V-POSI (WFP BOARD)	9.8 ms	10.8 ms	Oscilloscope: V-rate, 5 ms

■ Adjustment procedures

(1) Set the unit in wipe mode ◧ and turn the positioner switch OFF.
(2) Adjust MIX/SE lever so that the waveform shown below is obtained.
(3) Adjust R12 (H-rate) and R77 (V-rate) for the phase between front of the sync pulse and peak point.



H-rate



NTSC ..... 9.8 ms
PAL ..... 10.8 ms

V-rate

Fig. 5-2

5-2 POSITIONER variable range adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level		Measuring instrument
			NTSC	PAL	
–	PGM-1 (OUTPUT)	R185 H-POS-H R188 H-POS-L (LB BOARD)	55 μs 16 μs	55 μs 16 μs	Oscilloscope: H-rate, 20 μs
		R189 V-POS-L R192 V-POS-H (LB BOARD)	14 ms 3.5 ms	17.2 ms 4 ms	Oscilloscope: H-rate, 5 ms

■ **Adjustment procedures**

(1) Set the unit to wipe mode [●] and turn the positioner switch to ON.
(2) Adjust the MIX/SE lever as shown in Fig. 5-4.
(3) In the right figure, when the positioner is shifted in the direction of arrow (1), adjust R188 (H-POS-L) so that the phase between front of the sync pulse and peak is 16 μs.
When the positioner is shifted in the directions of arrows (2), (3) and (4), adjust R189 (V-POS-L), R185 (H-POS-H) and R192 (V-POS-H) so that the phases adjust as shown below respectively.

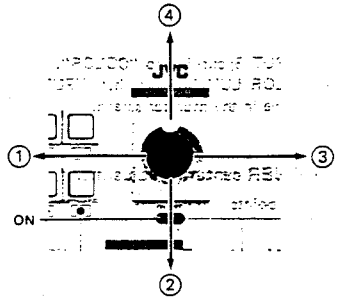


Fig. 5-3

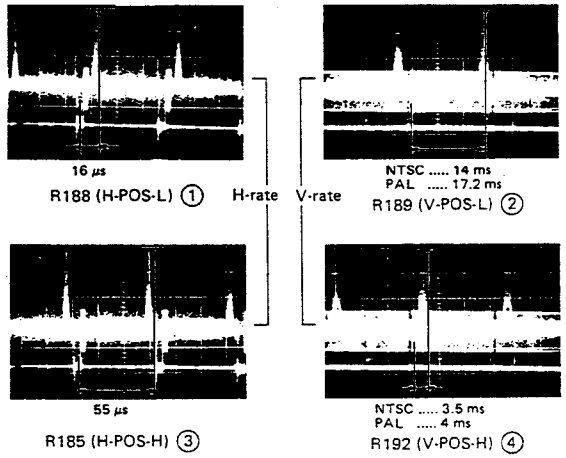


Fig. 5-4

5-3 Circle wipe level adjustment (THIS ADJUSTMENT HAVE TO ADJUST AFTER 5-7 DIA WIPE LEVEL ADJUSTMENT)

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
Cross Hatch Signal	PGM-2 (OUTPUT)	R31 H-PARA-LIN (WFP BOARD)	–	B/W (or Color) Monitor TV
		R99 V-PARA-LIN (WFP BOARD)	–	
		R101 V-PARA-LEVEL (WFP BOARD)	–	

■ **Adjustment procedures**

(1) Generate the cross hatch pattern from the test signal generator.
(2) Set the INPUT A bus-line to "1".
(3) Set the unit to wipe mode [●] and turn the positioner switch ON.
(4) Adjust R31, R99 and R101 so that the wipe pattern is circle referring the cross hatch pattern in the B/W monitor.

Note: Circle size – Adjust MIX/SE lever.
Center position – Adjust the POSITIONER.

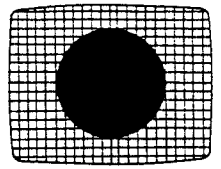


Fig. 5-5

5-4 H. WIPE adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
–	PGM-2 (OUTPUT)	R194 H-FADER (L) (LB BOARD)	–	B/W (Color) Monitor TV (Under-scanning)
		R168 H-FADER (H) (LB BOARD)	–	

■ **Adjustment procedures**

(1) Set the INPUT A bus-line to "2".
(2) Set the INPUT B bus-line to "COLOR".
(3) Set the unit to WIPE [■] and turn the positioner switch OFF.
(4) Set the N-R switch to "N-R".
(5) Operate the MIX/SE lever as shown below and adjust R198 (H-FADER) and R168 (H-FADER) so that the wipe disappears from the B/W monitor at the end 10 mm points.
(R198 is first)

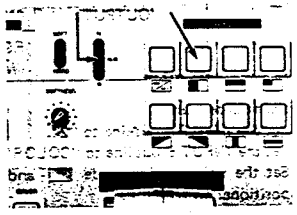


Fig. 5-6

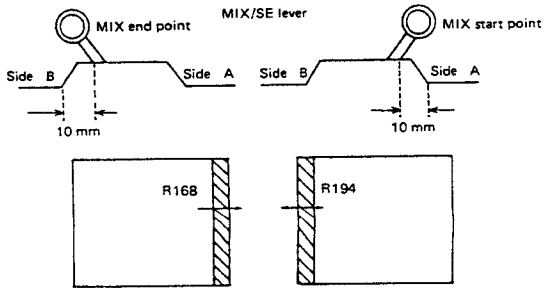


Fig. 5-7

4649

5-5 CORNER WIPE adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	PGM-2 (OUTPUT)	R196 V-FADER (L) (LB BOARD)	–	B/W (Color) Monitor TV (Under-scanning)
		R178 V-FADER (H) (LB BOARD)	–	

■ Adjustment procedures

(1) Set the INPUT A bus-line to "2".
(2) Set the INPUT B bus-line to "COLOR".
(3) Set the unit to WIPE mode and turn the positioner switch OFF.
(4) Set the N-R switch to "N-R".
(5) Adjust R178 (V-FADER-H) and R196 (V-FADER-L) so that the wipe starts H and V together and finishes together.
(6) Set the unit to wipe modes , , and sequentially and confirm the situation, If they are not the same, slightly turn R196 and R178 to compensate the mis-alignment.
(R196 is first)

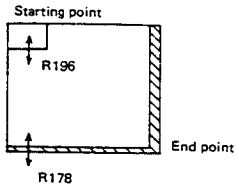


Fig. 5-8

5-6 DIAGONAL WIPE adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	PGM-2 (OUTPUT)	R132 H-V-MIX (WFP BOARD)	–	B/W Monitor TV (or Color Monitor) (Under-scanning is recommended.)
		R27 H-SAW-LIN (WFP BOARD)	–	
		R94 V-SAW-LIN (WFP BOARD)	–	

■ Adjustment procedures

(1) Set the INPUT A bus-line to "2".
(2) Set the INPUT B but-line to "COLOR".
(3) Set the unit to wipe mode and turn the positioner switch OFF.
(4) Operate the MIX/SE lever and adjust R132 (H-V-MIX) so that the wipe edge is positioned in the diagonal line of the B/W monitor.
(If this adjustment is impossible with R132, slightly turn R97 [V-SAN-LEVEL] on WFP BOARD).
(5) Compensate the slant wipe linearity with R27 (H-SAW-LIN) and R94 (V-SAW-LIN).

Note: Mainly adjust R94 and do not turn R27 excessively.
Proceed the same procedure in wipe mode .

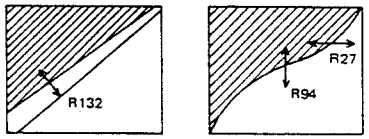


Fig. 5-9

5-7 DIA WIPE level adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	PGM-2 (OUTPUT)	R42 H-TRI-LIN (WFP BOARD)	–	B/W Monitor TV (or Color Monitor)
		R110 V-TRI-LIN (WFP BOARD)	–	
		R111 V-TRI-LEVEL (WFP BOARD)		

■ Adjustment procedures

(1) Set the INPUT A bus-line to "2".
(2) Set the INPUT B bus-line to "COLOR".
(3) Set the unit to wipe mode and turn the positioner switch OFF.
(4) Move the MIX/SE lever so that DIA WIPE appears in the monitor.
(5) Adjust R42 (H-TRI-LIN) and R110 (V-TRI-LIN) so that linear line is obtained.
(6) Extend the dia wipe pattern and set the horizontal length to maximum. At that time, adjust R111 (V-TRI-LEVEL) so that the upper and bottom gap in the vertical direction is 5%. If the center of the dia wipe pattern is mis-aligned, adjust R104 (V-TRI-PHASE) and R37 (H-TRI-PHASE) on WFP BOARD.

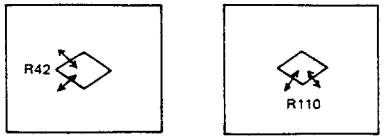


Fig. 5-10

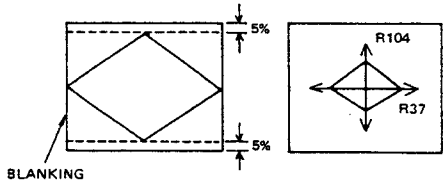


Fig. 5-11

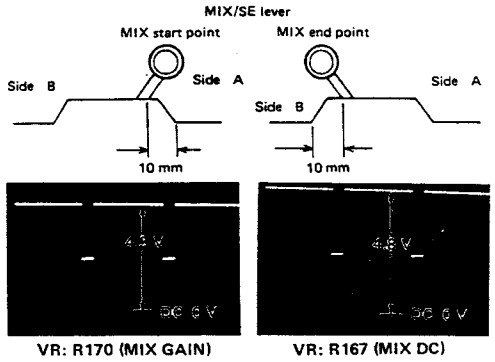
5-8 MIX/SE lever adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	TP-14 (WFP BOARD)	R170 MIX GAIN (WFP BOARD)	4.3 V DC	Oscilloscope: H-rate, 20 μs DC range
		R167 MIX DC (WFP BOARD)	4.8 V DC	

■ Adjustment procedures

(1) Connect an oscilloscope to TP-14 on WFP BOARD.
(2) Set the unit to MIX/KEY mode.
(3) Set the MIX/SE lever to MIX start point and adjust R170 so that the voltage at TP-14 is 4.3 V. (Fig. 4-9)
(4) Set the lever to MIX end point and adjust R167 so that the voltage at TP-14 is 4.8 V. (Fig. 4-9)
(5) As this adjustment affects each other, repeat procedures a few times.



VR: R170 (MIX GAIN) VR: R167 (MIX DC)

Fig. 5-12

5-9 MIX lever level adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
—	CENTER terminal of MIX FADER VR	R198 MIX-L (LB BOARD)	4.0 V	Digital Voltmeter
		R180 MIX-H (LB BOARD)	5.0 V	

■ **Adjustment procedures**

Move the MIX FADER lever as shown below and adjust R198 (MIX-L) and R180 (MIX-H) so that the center terminal voltage of MIX FADER VR is as specified.

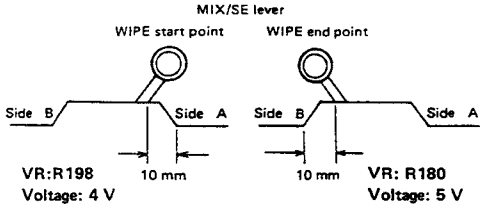


Fig. 5-13

5-10 SOFT WIPE adjustment

■ **Adjustment points**

Input signal	Observe	VR	Signal level NTSC	Signal level PAL	Measuring instrument
100% WHITE Signal 0% BLACK Signal	PGM-1 (OUTPUT)	R181 SOFT (H) (LB BOARD)	2.0 μs		Oscilloscope: H-rate, 10 μs
		R184 SOFT (L) (LB BOARD)	1.0 μs		
		R192 SOFT-BAL (WFP BOARD)	—		Color Monitor

■ **Adjustment procedures**

(1) Apply 100% white signal to INPUT 1 and 0% black signal to INPUT 2.
(2) Set the unit to wipe mode ■□.
(3) Set SOFT/HARD switch to SOFT.
(4) Connect an oscilloscope to PGM-1.
(5) Adjust R183 (SOFT-L) so that H. WIPE width is 1.0 μs when the SOFTNESS knob is set to minimum.
Adjust R181 (SOFT-H) so that H. WIPE width is 2.0 μs when the SOFTNESS knob is set to maximum.
(6) Connect a Color Monitor to PGM-1.
(7) Set the unit to wipe mode □■.
(8) Adjust the SOFTNESS knob so that wipe edge of WHITE and BLACK is soften on the monitor.
(9) Adjust R192 (SOFT-BAL) on WFP BOARD so that the soft wipe effects equally to horizontal and vertical edges.

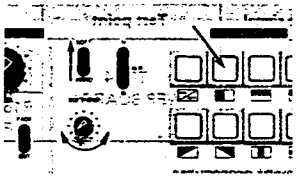


Fig. 5-14

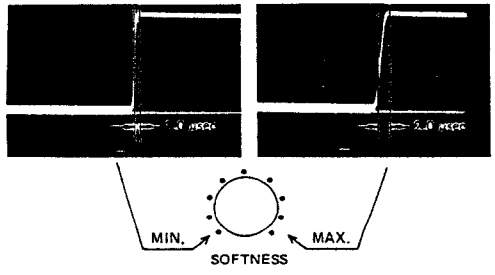


Fig. 5-15

6. VIDEO OUTPUT LEVEL ADJUSTMENT

Before starting adjustments, connect the unit as shown below.

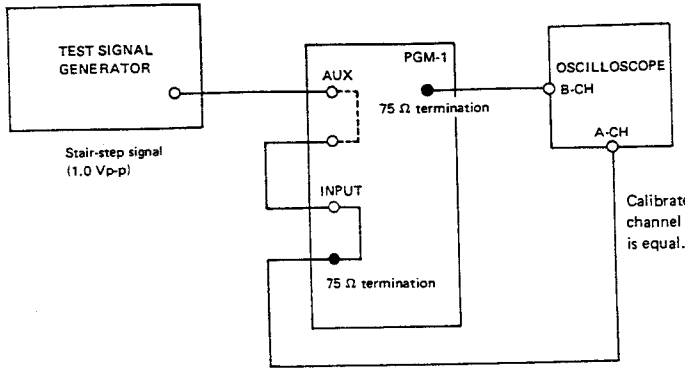


Fig. 6-1

6-1 INPUT level adjustment without special effect

■ **Adjustment points**

Input signal	Test point	VR [CP BOARD]	Signal level	Measuring instrument
Stair-step Signal (1.0 Vp-p)	PGM-1	R215 PGM LEVEL	1.0 Vp-p (Same as INPUT signal)	Oscilloscope: H-rate, 10 μs (75 Ω termination)
	PVM	R301 PVW LEVEL		

■ **Adjustment procedures**

(1) Set A, B and C bus-lines to "1".
(2) Set the program switch to AUX.
(3) Connect an oscilloscope A-Ch to STARI-STEP SIGNAL and B-ch to PGM-1.
(4) Adjust R215 (PGM LEVEL) so that the ratio between the input and program output is 1 : 1.
(5) Connect an oscilloscope A-ch to preview output.
(6) Set the preview bus-line to "1".
(7) Adjust R301 (PVM LEVEL) so that ratio between input and preview output is 1 : 1.
(8) Set the PROGRAM selector to EFT.

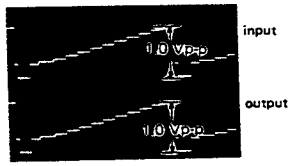


Fig. 6-2

6-2 MIX/SE CIRCUIT INPUT level adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
Stair-step Signal (1.0 Vp-p)	TP-3 (VIDEO BOARD)	R41 A-GAIN (VIDEO BOARD)	1.0 Vp-p (Same as INPUT signal)	Oscilloscope: H-rate, 10 μs (75 Ω termination)
		R46 B-GAIN (VIDEO BOARD)		
		R64 B-SET-UP (VIDEO BOARD)	—	

■ **Adjustment procedures**

(1) Connect an oscilloscope B-ch to TP-3 (VIDEO BOARD).
(2) Set A, B and C bus-lines to "1".
(3) Set the MIX/SE lever to A and adjust R41 (A-GAIN) so that the input and output level are the same (1.0 Vp-p).
(4) Set the MIX/SE lever to direction B and adjust R46 (B-GAIN) so that the INPUT and TP-3 level are the same (1.0 Vp-p), then adjust R64 (B-SETUP).

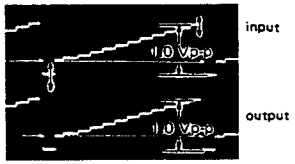


Fig. 6-3

6-3 MIX CIRCUIT INPUT level adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
Stair-step Signal (1.0 Vp-p)	TP-6 (VIDEO BOARD)	R109 SE-GAIN (VIDEO BOARD)	1.0 Vp-p (Same as INPUT signal)	Oscilloscope: H-rate, 10 μs (75 Ω termination)
		R116 C-GAIN (VIDEO BOARD)		
		R83 C SET-UP (VIDEO BOARD)	—	Oscilloscope: DC range

■ **Adjustment procedures**

(1) Connect an oscilloscope B-ch to TP-6 (VIDEO BOARD).
(2) Set A, B and C bus-lines to "1".
(3) Set the MIX/SE lever to A.
(4) Set the MIX lever to MIX/SE.
(5) Adjust R109 (SE-GAIN) so that the input and TP-6 level are the same (1.0 Vp-p).
(6) Set the MIX lever to C and adjust R111 (C-GAIN) so that the input and TP-6 level are the same (1.0 Vp-p).
(7) Observe the level at TP-6 with the oscilloscope DC range.
Adjust R83 (C SET-UP) so that the DC levels are the same when the MIX lever is turned to C and MIX/SE side.

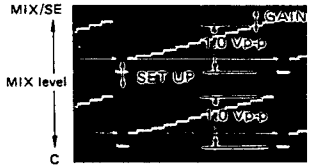


Fig. 6-4

6-4 DSK level adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
Stair-step Signal (1.0 Vp-p)	TP-7 (VIDEO BOARD)	R155 VIDEO GAIN (VIDEO BOARD)	1.0 Vp-p (Same as INPUT Signal)	Oscilloscope: H-rate, 10 μs (75 Ω termination)

■ **Adjustment procedures**

(1) Connect an oscilloscope B-ch to TP-7 (VIDEO BOARD).
(2) Set INPUT A bus-line to "1".
(3) Set the MIX/SE lever to A and MIX lever to MIX/SE.
(4) Turn the DSK SW OFF.
(5) Adjust R155 (VIDEO GAIN) so that the input and TP-7 levels are the same (1.0 Vp-p).

6-5 VIDEO FADER level adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
Stair-step Signal (1.0 Vp-p)	PGM-1 (OUTPUT)	R215 VIDEO GAIN (VIDEO BOARD)	1.0 Vp-p (Same as INPUT Signal)	Oscilloscope: H-rate, 10 μs (75 Ω termination)
		R227 TOTAL SETUP (CP BOARD)		

■ **Adjustment procedures**

(1) Connect an oscilloscope B-ch to PGM-1.
(2) Turn R225 (W-CLIP) fully clockwise.
(3) Adjust R215 (VIDEO GAIN) so that the input and PGM-1 levels are the same (1.0 Vp-p).
(4) Adjust R227 (TOTAL SETUP) so that the input and PGM-1 output are equal.

6-6 Program output level adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level		Measuring instrument
			NTSC	PAL	
—	PGM-1 (OUTPUT)	R219 BB GAIN (VIDEO BOARD)	0.286 V	0.3 V	Oscilloscope: H-rate, 20 μs (75 Ω termination)
		R11 BF LEVEL (BC BOARD)	0.286 V	0.3 V	

■ **Adjustment procedures**

(1) Set A, B and C bus-lines to "2".
(2) Connect an oscilloscope to PGM-1 and adjust R219 (B.B. GAIN) for sync level. (Fig. 6-5)
(3) Adjust R11 (BF LEVEL) for burst level. (Fig. 5-5)

Fig. 6-5

7 BACKGROUND COLOR SIGNAL ADJUSTMENT

Before starting adjustments, proceed as follows.

(1) Move the BC board to the outside by using the PWB extender provided to adjust it.
(2) Set the INPUT A bus-line to "COLOR".
(3) Connect an oscilloscope and a vectorscope to PGM-1.
(4) Set the MIX/SE lever to A.
(5) Set the MIX lever to MIX/SE.
(6) Set the COLOR ON/OFF switch on the control unit to ON.
(7) Adjust SAT and LUM knobs so that the color signal is output at PGM-1.
(If the signal is not output, slightly turn R4 [SAT-L] and R6 [LUM-H] on the DS BOARD.)
(8) Fully turn R225 (W-CLIP) on VIDEO BOARD clockwise.

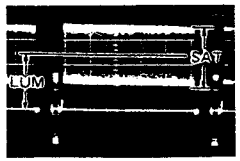


Fig. 7-1

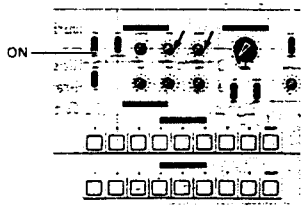


Fig. 7-2

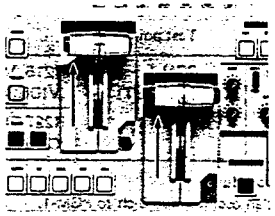


Fig. 7-3

7-1 Luminance signal adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
–	PGM-1 (OUTPUT)	R6 LUM-L (BCC BOARD)	–	Oscilloscope: H-rate, 10 μs
		R4 LUM-H (BCC BOARD)	0.8 Vp-p	

■ **Adjustment procedures**

(1) Set the COLOR ON/OFF switch to OFF.
(2) Set the SAT knob to minimum.
(3) Set the LUM knob to scale "2".
(4) Adjust R6 (LUM-L) so that the video level is 0%.
(5) Set the LUM knob to maximum.
(6) Adjust R14 (LUM-H) so that the video level is 0.8 Vp-p.

Fig. 7-4

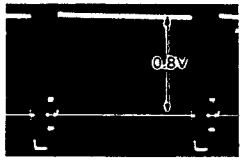


Fig. 7-5

7-2 Saturation adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
–	PGM-1 (OUTPUT)	R11 SAT-H (BCC BOARD)	–	Oscilloscope: H-rate, 10 μs
		R4 SAT-L (BCC BOARD)	–	
		R221 BC SAT (BC BOARD)	0.8 V	

■ **Adjustment procedures**

(1) Turn R11 (SAT-H) fully counterclockwise.
(2) Set the COLOR SAT knob on the control unit to MAX.
(3) Adjust R4 (SAT-L) so that the SAT level is maximum.
(4) Adjust R221 (BC SAT) on the BC BOARD so that the PGM-1 level is 0.8 V.
(5) Set the COLOR SAT knob on the control unit to scale 1–2 and confirm that the color level is less than 10%. If the level exceeds 10%, turn R4 (SAT-L) to decrease the level and adjust R221 (BC SAT) again so that the output level is 0.8 V.

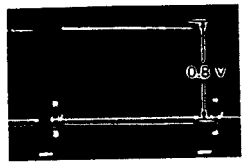


Fig. 7-6

7-3 HUE adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level		Measuring instrument
			NTSC	PAL	
–	PGM-1 (OUTPUT)	R2 HUE-L (BCC BOARD)	–		Oscilloscope: H-rate, 10 μs Vectorscope:
		R8 HUE-H (BCC BOARD)	–		
		C78 BC PHASE (BC BOARD)		–	

■ Adjustment procedures

NTSC

(1) Connect an oscilloscope and vectorscope to PGM-1.
(2) Adjust SAT knob on the control unit so that the signal level on the oscilloscope is 0.7 Vp-p.
(3) Turn the HUE knob fully clockwise.
(4) Set R8 (HUE-H) to mechanical center of VR.
(5) Turn the HUE knob fully counterclockwise and adjust R2 (HUE-L) so that the dot in the vectorscope rotates by 380 ± 10°. If the adjustment is not enough with R2 (HUE-H), turn R8 (HUE-H).

PAL

(1) Connect an oscilloscope and vectorscope to PGM-1.
(2) Adjust SAT knob on the control unit so that the signal level on the oscilloscope is 0.7 Vp-p.
(3) Adjust HUE knob and adjust C78 (BC PHASE) on the BC BOARD so that two dots are in the horizontal line on the vectorscope. The misalignment should be within ±20%.
(4) Turn the HUE knob fully clockwise.
(5) Set R8 (HUE-H) to mechanical center of VR.
(6) Turn the HUE knob fully counterclockwise and adjust R2 (HUE-L) so that the dot in the vectorscope rotates by 380 ± 10°. If the adjustment is not enough with R2 (HUE-L), turn R8 (HUE-H).

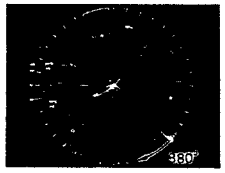


Fig. 7-7

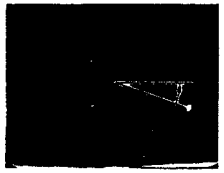


Fig. 7-8

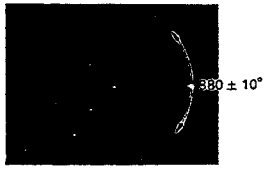


Fig. 7-9

8. SUPERIMPOSE ADJUSTMENT

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
Stair-step Signal	PGM-1 (OUTPUT)	R14 SUPER-L (CK BOARD)	–	Oscilloscope: H-rate, 20 μs
		R16 SUPER-H (CK BOARD)	0.8 Vp-p	

■ Adjustment procedures

(1) Apply a stair-step signal to SUPER INPUT connector through GEN-LOCK INPUT.
(2) Set the CUT-FADE switch to CUT.
(3) Set the SUPER ON/OFF switch to ON.
(4) Adjust R14 (SUPER-L) so that the super starts when the super level is set to scale 3.
(5) Set the level knob to MAX and adjust R16 (SUPER-H) so that 0.8 Vp-p is obtained.

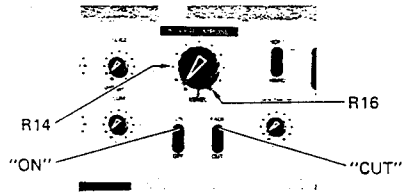


Fig. 8-1

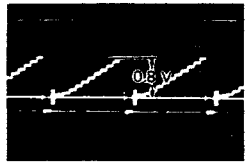


Fig. 8-2

9. DSK SIGNAL ADJUSTMENT

Before starting adjustments, proceed as follows.

(1) Move the BC BOARD to the outside by using the PWB extender provided to adjust it.
(2) Apply a window pattern signal of test signal generator to DSK input connector through GEN-LOCK INPUT.
(3) Connect an oscilloscope to TP-2 (VIDEO BOARD).
(4) Set the DSK switch on the control panel to ON.
(5) Turn the SLICE and LEVEL knobs so that the DSK signal is output. (If the DSK signal is not output, slightly turn R4 [SAT-L] and R6 [LUM-H] or the DS BOARD.)

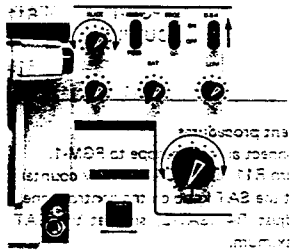


Fig. 9-2

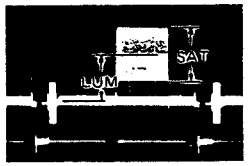


Fig. 9-1

9-1 Luminance adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
Window Pattern Signal	TP-2 (BC BOARD)	R 6 LUM-L (DS BOARD)	MAX	Oscilloscope: H-rate, 20 μs
		R14 LUM-H (DS BOARD)	0.8 V	
	PGM-1	R159 DSK GAIN (VIDEO BOARD)	0.8 V	
		R73 DSK SET-UP (VIDEO BOARD)	–	

■ Adjustment procedures

(1) Set the SAT knob to minimum.
(2) Set the LUM knob on the control panel to scale 2.
(3) Adjust R6(LUM-L) so that the video level is 0%.
(4) Set the LUM knob to MAX.
(5) Adjust R14 (LUM-H) so that the video level is 0.8 Vp-p.
(6) Connect an oscilloscope to PGM-1 (rear of MAIN UNIT).
Adjust R159 (DSK GAIN) on VIDEO BOARD so that the video level is 0.8 Vp-p.
(7) Turn DSK EDGE switch to ON.
(8) Adjust R73 (DSK SET-UP) on VIDEO BOARD so that edge signal and black level of video signal are the same.

Fig. 9-3

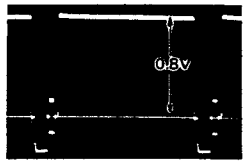


Fig. 9-4

9-2 Saturation adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
Window Pattern Signal	PGM-1 (OUTPUT)	R4 SAT-L (DS BOARD)	–	Oscilloscope: H-rate, 20 μs
		R11 SAT-H (DS BOARD)	MAX	
		R165 BC SAT (BC BOARD)	0.8 V	

■ Adjustment procedures

(1) Connect an oscilloscope to PGM-1.
(2) Turn R11 (BCC BOARD) fully counterclockwise.
(3) Set the SAT knob on the control panel to MAX.
(4) Adjust R4 (SAT-L) so that the SAT level is maximum.
(5) Adjust R165 (BC SAT) on BC BOARD so that the output level is 0.8 V.
(6) After adjustment, confirm that the SAT level is less than 10% when the SAT knob is set to scale 1–2.
If the SAT level exceeds 10%, slightly turn R4 (SAT-L) to decrease the level and adjust R165 (BC BOARD) again to obtain 0.8 V.

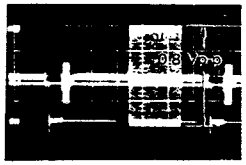


Fig. 9-5

9-3 HUE adjustment

■ Adjustment points

Input signal	Test point	VR	Signal level NTSC	Signal level PAL	Measuring instrument
–	PGM-1 (OUTPUT)	R2 HUE-L (BCC BOARD)	–		Oscilloscope: H-rate, 10 μs Vectorscope:
		R8 HUE-H (BCC BOARD)	–		
		C55 DSK PHASE (BC BOARD)		–	

■ Adjustment procedures

NTSC

(1) Connect an oscilloscope and vectorscope to PGM-1.
(2) Adjust SAT knob on the control unit so that the video level on the oscilloscope is 0.7 Vp-p.
(3) Turn the HUE knob fully clockwise.
(4) Set R8 (HUE-H) to mechanical center of VR.
(5) Turn the HUE knob fully counterclockwise and adjust R2 (HUE-L) so that the dot in the vectorscope rotates by 380 ± 10°. If the adjustment is not enough with R2, turn R8.

PAL

(1) Connect an oscilloscope and vectorscope to PGM-1.
(2) Adjust SAT knob on the control unit so that the video level on the oscilloscope is 0.7 Vp-p.
(3) Adjust HUE knob and adjust C55 (DSK PHASE) on the BC BOARD so that two dots are in the horizontal line. The mis-alignment should be within ±20%.
(4) Fully turn the HUE knob clockwise.
(5) Set R8 (HUE-H) to center of VR.
(6) Fully turn the HUE knob counterclockwise and adjust R2 (HUE-L) so that the dot in the vectorscope rotates by 380 ± 10°. If the adjustment is not enough with R2, turn R8.

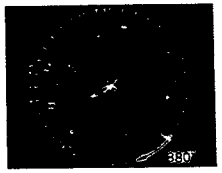


Fig. 9-6

Fig. 9-7

Fig. 9-8

6 61

Before starting adjustments, proceed as follows.

(1) Move the WFP BOARD to the outside by using the PWB extender provided to adjust it.
(2) Set INPUT C bus-line to "COLOR".
(3) Set MIX lever to C.
(4) Connect a color monitor to PGM-1 (rear of MAIN UNIT).
(5) Adjust HUE, SAT and LUM knobs to determine the background color.
(6) Apply a window pattern signal to DSK INPUT connectors through GEN-LOCK INPUT.
(7) Set DSK ON/OFF switch to ON.
(8) Turn the DSK knob so that the output level is 100%. (Adjust so that the video level at PGM-1 is 0.7 Vp-p.)

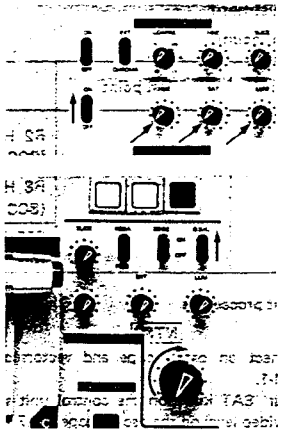


Fig. 9-9

9-4 DSK EDGE adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
Window Pattern Signal	PGM-1 (OUTPUT)	R245 DSK-EDGE (WFP BOARD)	–	Color Monitor TV

■ **Adjustment procedures**

(1) Set EDGE switch on the control unit to ON.
(2) Adjust R245 (DSK-EDGE) so that the horizontal edges of the window are black.

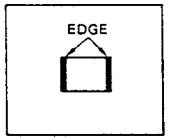


Fig. 9-10

9-5 DSK LEVEL adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
Window Pattern Signal	PGM-1 (OUTPUT)	R200 DSK LEVEL (L) (LB BOARD)	–	Color Monitor TV
		R202 DSK LEVEL (H) (LB BOARD)	–	

■ **Adjustment procedures**

(1) Set NEGA/POSI switch to NEGA.
(2) Set EDGE switch to OFF.
(3) Set DSK level to maximum.
(4) Turn the SLICE knob and adjust R200 (DSK LEVEL-L) so that the DSK functions at a scale 2 and DSK stops at a scale 6.
(5) Set the NEGA/POSI switch to POSI.
(6) Turn LEVEL knob and adjust R202 (DSK LEVEL-H) so that the DSK stops at a scale 3 and DSK functions at maximum.

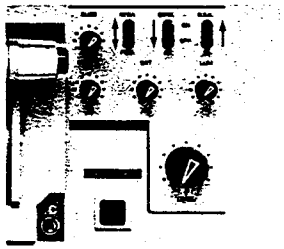


Fig. 9-11

9-6 DSK PREVIEW output signal adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
Window Pattern Signal	DSK PREVIEW (OUTPUT)	R166 PVW GAIN (VIDEO BOARD)	Same level as PGM-1	Oscilloscope
		R167 DSK PVW GAIN (VIDEO BOARD)		

■ **Adjustment procedures**

(1) Connect an oscilloscope A-ch to PGM-1 and B-ch to DSK PREVIEW OUTPUT.
(2) Adjust R166 and R167 so that the output at DSK PREVIEW OUTPUT equals to PGM-1.

9-7 DSK SLICE adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
STAIR-STEP Signal	PGM-1 (OUTPUT)	R204 DSK-SLICE (L) (LB BOARD)	–	Color Monitor
		R205 DSK-SLICE (H) (LB BOARD)	–	

■ **Adjustment procedures**

(1) Apply a stair-step signal to DSK INPUT connector through GEN-LOCK INPUT.
(2) Set INPUT C bus-line to "COLOR" and generate 100% white signal to be used as a background color signal.
(3) Set MIX lever to C.
(4) Set NEGA/POSI switch to POSI.
(5) Set EDGE switch to OFF.
(6) Set DSK LUM knob to MAX.
(7) Set DSK ON/OFF switch to ON.
(8) Adjust R204 (DSK SLICE-L) so that the second step from the left is sliced when the SLICE knob is set to fully clockwise.
(9) Adjust R205 (DSK SLICE-H) so that the stair-step pattern is not sliced and background color appears when the SLICE knob is set to minimum.

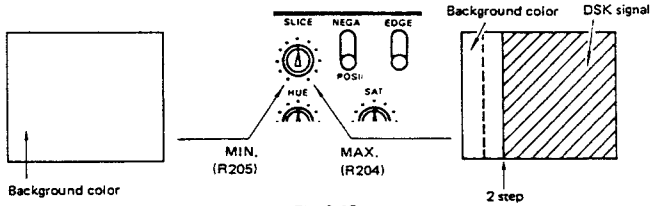


Fig. 9-12

10 CHROMA KEY SIGNAL ADJUSTMENT

10-1 EXT KEY SLICE level adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
• Color Signal (R, G, B) • Stair-step Signal	PGM-1 (OUTPUT)	R9 SLICE (CK BOARD)	–	Color Monitor TV (under-scanning)
		R10 SLICE (CK BOARD)	–	

■ **Adjustment procedures**

(1) Apply stair-step signal to EXT KEY INPUT.
(2) Apply color signals (R, G, B) to CHROMA KEY INPUT.
(3) Apply different input to INPUT A and B.
(Ex. Input A . . . Color camera
Input B . . . Background color)
(4) Connect a color monitor TV to PGM-1.
(5) Set CHROMA KEY ON/OFF switch to ON.
(6) Set EXT-CHROMA switch to EXT.
(7) Set MIX/SE lever to A.
(8) Set the SLICE knob on the panel to minimum and adjust R9 (SLICE) on the CK BOARD so that the color monitor displays input A.
(9) Set the SLICE knob on the panel to scale 8. Adjust R10 (SLICE) on the CK BOARD so that the color monitor displays input B.

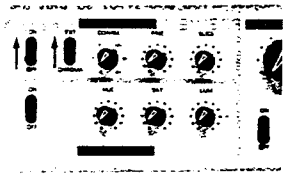


Fig. 10-1

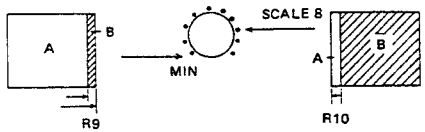


Fig. 10-2

10-2 CHROMA KEY FINE level adjustment

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
–	Center terminal of FINE VR	R2 FINE-L (CK BOARD)	+3 V	Digital Voltmeter
		R4 FINE-H (CK BOARD)	+5 V	

■ **Adjustment procedures**

(1) Set MIX/SE lever to A.
(2) Set MIX lever to MIX/SE.
(3) Set the WIPE MODE to MIX/KEY.
(4) Set the CHROMA KEY ON/OFF switch to ON.
(5) Set the CHROMA/EXT switch to CHROMA.
(6) Adjust the voltage of center terminal of FINE VR with R2 (FINE-L) and R4 (FINE-H).

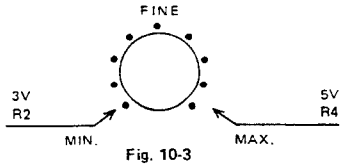


Fig. 10-3

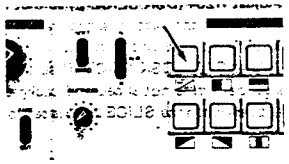


Fig. 10-4

11 PHASE ADJUSTMENT

Before starting adjustments, proceed as follows.

(1) Apply a color bars signal (1.0 Vp-p) to INPUT 1 through GEN-LOCK INPUT.
(2) Connect a vectorscope to PGM-1.
(3) Set A, B and C bus-lines to "1".

11-1 SC PHASE adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
Color-Bars Signal	PGM-1 (OUTPUT)	R18 (NTSC) R19 (PAL) SC PHASE (SG BOARD)	–	Vectorscope

■ **Adjustment procedures**

(1) Set the MIX/SE lever to A.
(2) Set the MIX lever to MIX/SE.
(3) Adjust PAL-R19, NTSC-R18 (SC PHASE) on SG BOARD so that signal of PGM-1 output is right color-bar phase.

11-2 Phase adjustment between A and B bus-lines

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
Color-Bars Signal	PGM-1 (OUTPUT)	R14 B PHASE (VIDEO BOARD)	–	Vectorscope

■ **Adjustment procedures**

(1) Select wipe mode to ▬.
(2) Set the MIX/SE lever to its center.
(3) Set the MIX lever to MIX/SE.
(4) Adjust R14 (B-PHASE) so that color dots of A and B bus-line signals are on the same positions.

11-3 SE phase adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
Color-Bar Signal	PGM-1 (OUTPUT)	R85 SE PHASE (VIDEO BOARD)	–	Vectorscope

■ **Adjustment procedures**

(1) Set the MIX/SE lever to A.
(2) Select the C bus-line to SE.
(3) Adjust R85 (SE PHASE) so that the dots are on the same positions when the MIX lever sets to C and MIX/SE.

6 65

11-4 C bus-line phase adjustment

■ **Adjustment point**

Input signal	Test point	VR	Signal level	Measuring instrument
Color-Bar Signal	PGM-1 (OUTPUT)	R68 C PHASE (VIDEO BOARD)	–	Vectorscope

■ **Adjustment procedures**

(1) Select the C bus-line to "1".
(2) Set the MIX/SE lever to A.
(3) Adjust R68 (C PHASE) so that the dots are on the same positions when the MIX/SE lever sets to C and MIX/SE.

12. FREQUENCY RESPONSE ADJUSTMENT

■ **Adjustment points**

Input signal	Test point	VR	Signal level	Measuring instrument
Sweep Signal	TP-3 (VIDEO BOARD)	C30 A-HF C33 B-HF (VIDEO BOARD)	–	Oscilloscope (75 Ω termination)
	TP-6 (VIDEO BOARD)	C70 SE-HF C73 C-HF (VIDEO BOARD)	–	
	TP-9 (VIDEO BOARD)	C136 VIDEO-HF (VIDEO BOARD)	–	
	PGM-1 (OUTPUT)	C24 HF-ADJ (CP BOARD)	–	

■ **Adjustment procedures**

(1) Apply a sweep signal to INPUT 1 connector through GEN-LOCK INPUT. (75 Ω termination)
(2) Set A, B and C bus-lines to "1".
(3) Connect an oscilloscope A-ch to INPUT 1 and B-ch to TP-3 on VIDEO BOARD.
(4) Adjust frequency response nearly equals to that of INPUT when the MIX/SE lever sets to A and B.

MIX/SE lever < A – C30 (A-HF) / B – C33 (B-HF)

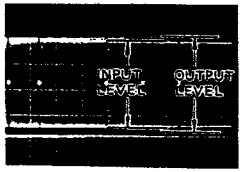


Fig. 12-1

(5) Connect an oscilloscope A-ch to INPUT 1 and B-ch to TP-6 on VIDEO BOARD.

MIX lever < MIX/SE – C70 (SE-HF) / C ——— C73 (C-HF)

(6) Adjust frequency response nearly equals to that of INPUT when the MIX lever sets to MIX/SE and C.
(7) Connect an oscilloscope A-ch to INPUT 1 and B-ch to TP-9 on VIDEO BOARD.
Adjust C136 (VIDEO-HF) so that the frequency response nearly equals to that of the input.
(8) Connect an oscilloscope A-ch to INPUT 1 and B-ch to PGM-1 (75 Ω termination).
Adjust C24 (CP BOARD) so that the frequency response nearly equals to that of the input.

NOTE: As this adjustment affects PGM-out PHASE, and so repeat adjustment 11. and 12. a few time.

13. WHITE CLIP ADJUSTMENT

■ Adjustment point

Input signal	Test point	VR	Signal level	Measuring instrument
Stair-step Signal	PGM-1 (OUTPUT)	R225 W-CLIP (VIDEO BOARD)	–	Oscilloscope: H-rate, 10 μs

■ Adjustment procedures

(1) Apply stair-step signal to INPUT 1. Remove 75 Ω input termination to increase a signal of more than 1 Vp-p.
(2) Set INPUT C bus-line to 1.
(3) Set MIX lever to C.
(4) Connect an oscilloscope to PGM-1.
(5) Adjust R225 (W-CLIP) so that the signal clipped at 120%.

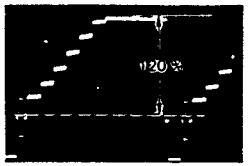


Fig. 13-1

14. AUTO FADE TIME ADJUSTMENT

■ Adjustment points

Input signal	Test point	VR	Signal level	Measuring instrument
–	CN01 Pin (12) (LB BOARD)	R162 RISE TIME (LB BOARD)	6 sec	Oscilloscope:
		R160 FALL TIME (LB BOARD)	6 sec	

■ Adjustment procedures

(1) Select the PROGRAM selector to "BLACK".
(2) Connect an oscilloscope to CN01 pin (12) on LB BOARD.
(3) Adjust R162 (RISE TIME) so that rise time is 2 sec, when select the PROGRAM selector from "BLACK" to "EFF". (Fig. 14-1)
(4) Adjust R160 (FALL TIME) so that fall time is 2 sec, when select the PROGRAM selector from "EFF" to "BLACK". (Fig. 14-2)

RISE TIME

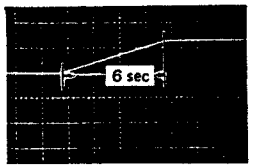


Fig. 14-1

FALL TIME

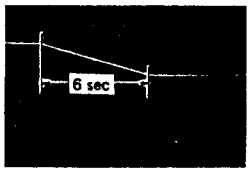


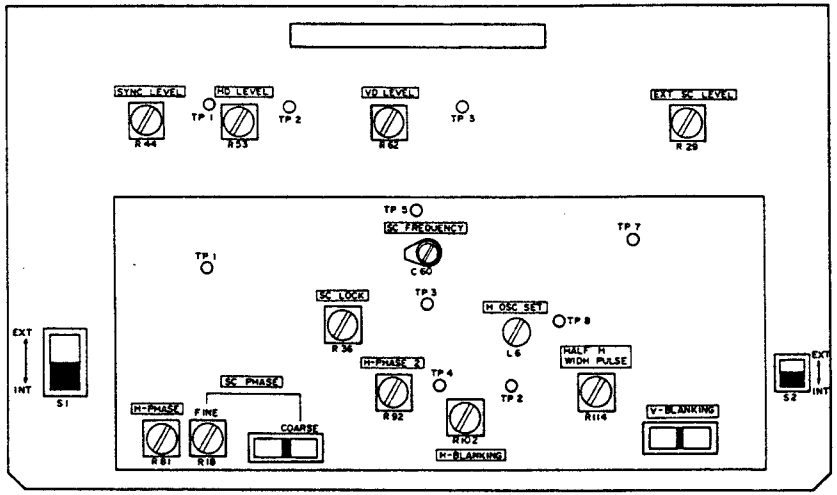
Fig. 14-2

NOTE: When the RISE (FALL) TIME is adjusted 6 sec, FADE IN (OUT) TIME is nearly 4.5 sec. If RISE (FALL) TIME is set long time, start of FADE IN (FADE OUT) are lagged.

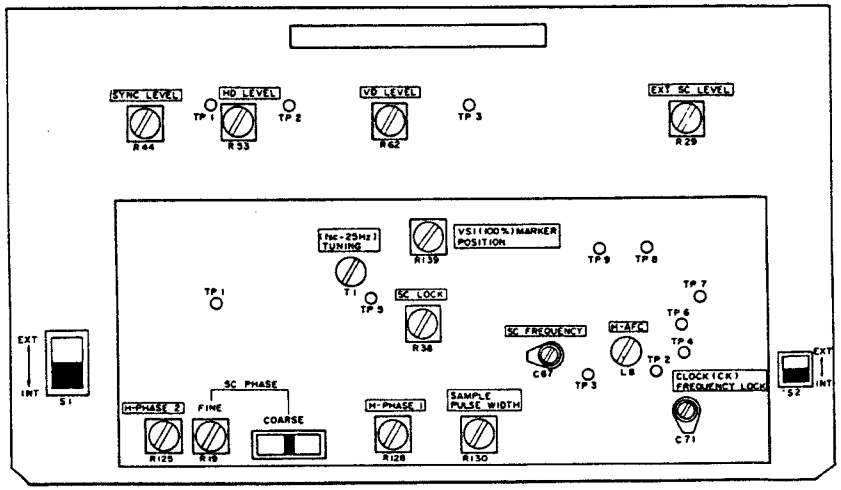
SECTION 4
POSITION OF TEST POINT AND POTENTIOMETER

4.1 SG BOARD

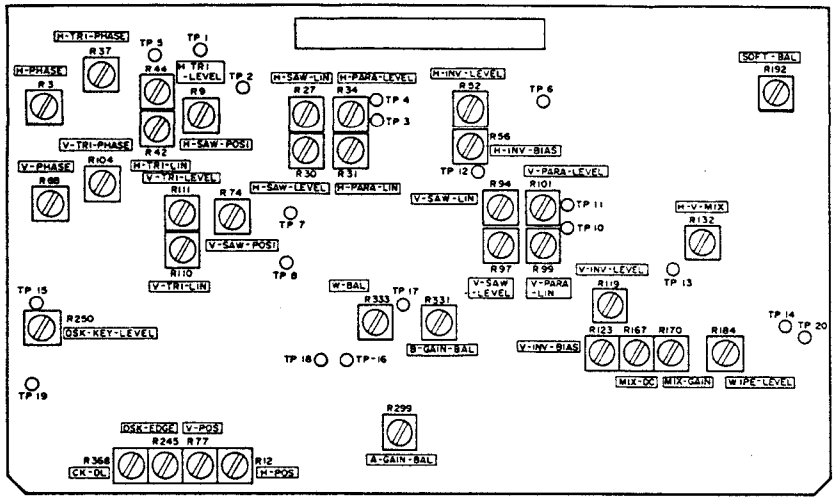
(NTSC)



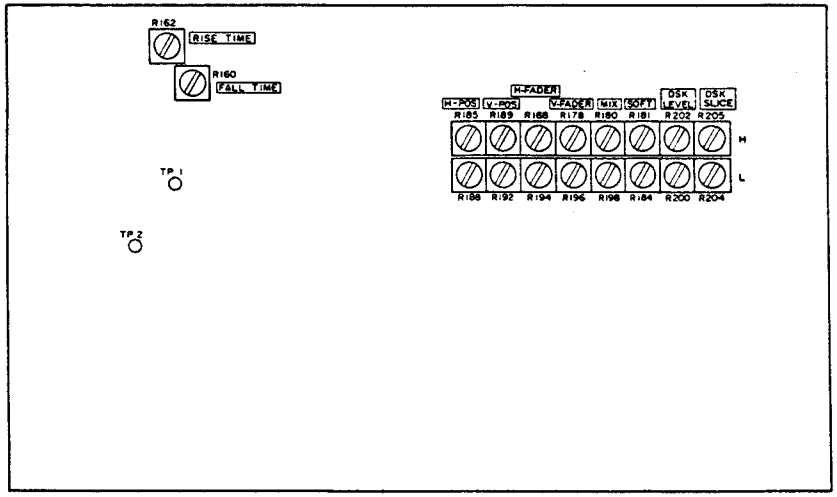
(PAL)



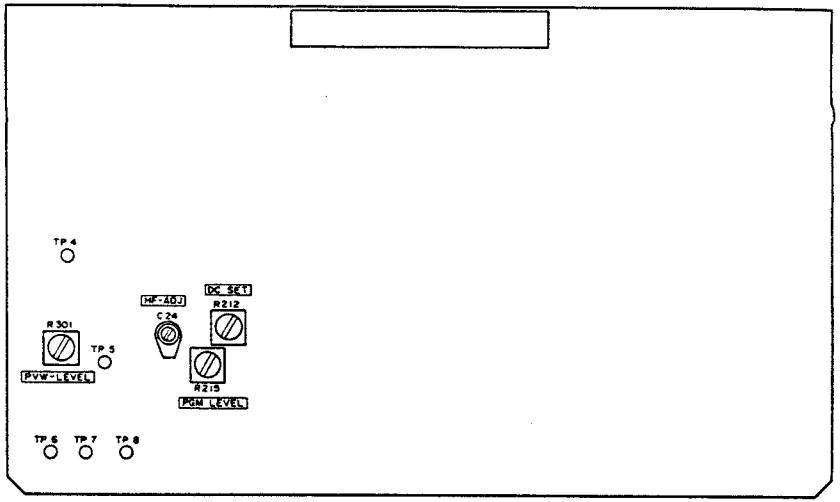
4.2 WFP BOARD



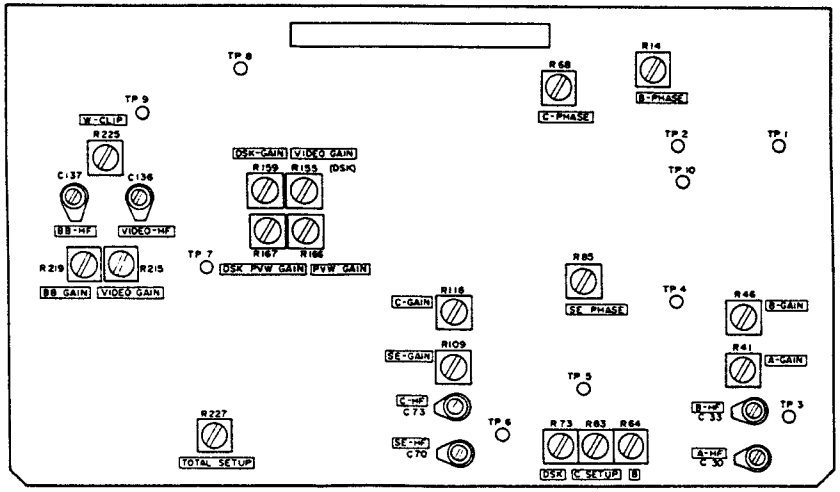
4.3 LB BOARD



4.4 CP BOARD

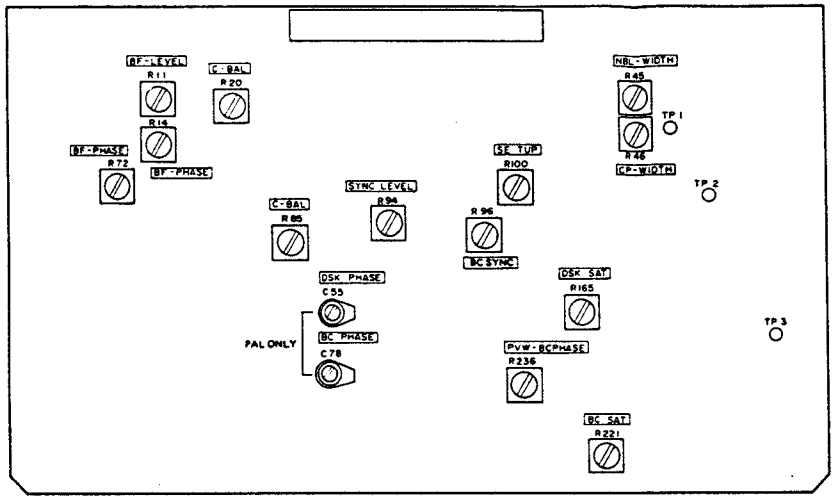


4.5 VIDEO BOARD

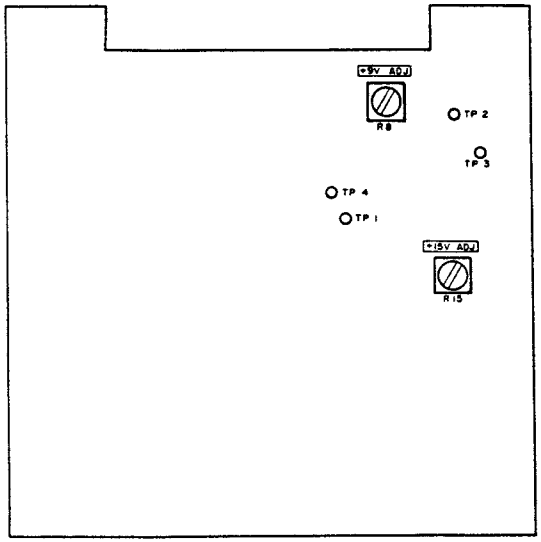


4-1

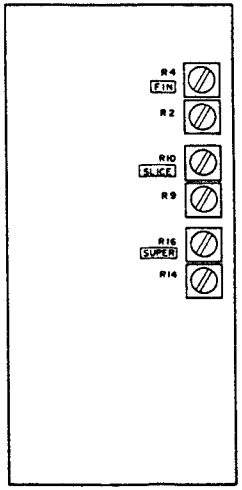
4.6 BC BOARD



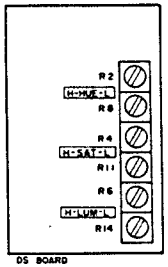
4.7 PS BOARD



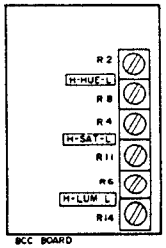
4.8 CK BOARD



4.9 DS BOARD

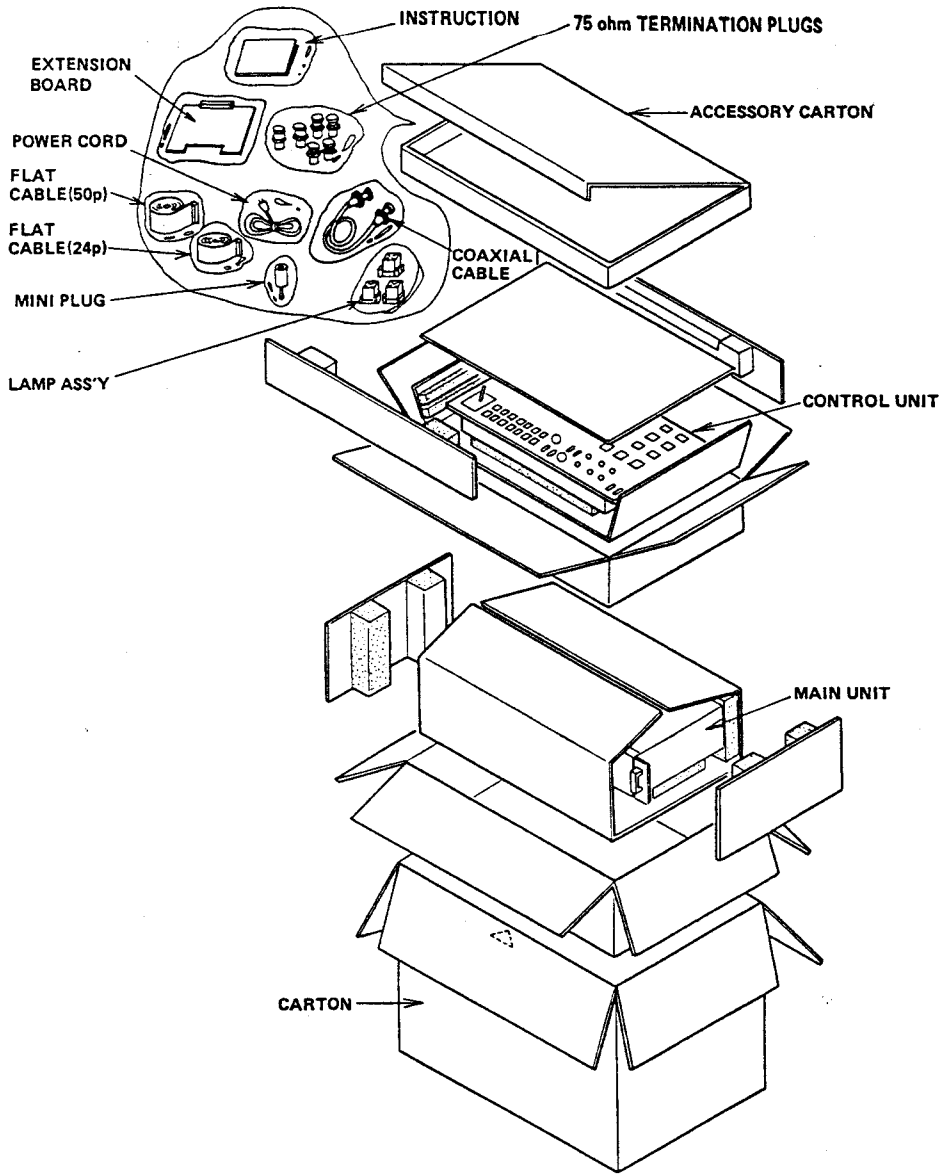


4.10 BCC BOARD



5-1

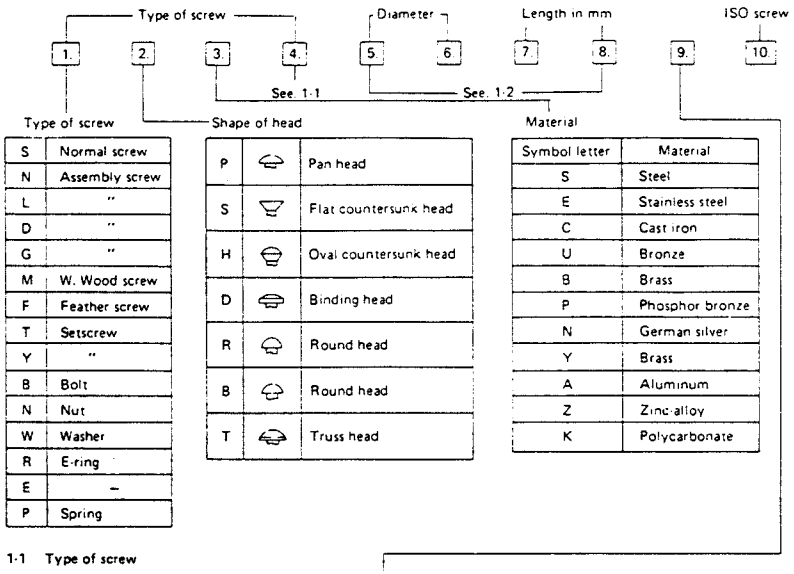
SECTION 5
REPACKING



SECTION 6
EXPLODED VIEWS AND PARTS LIST

6.1 MIX/SE LEVER ASS'Y
6.2 MIX LEVER ASS'Y
6.3 CONTROL UNIT ASS'Y
6.4 KEY KNOB ASS'Y

Note: In this exploded views the part number of the screws and washers designate the type and dimensions of these items.
The following examples will help you to decipher them.



S	Normal screw
N	Assembly screw
L	"
D	"
G	"
M	W. Wood screw
F	Feather screw
T	Setscrew
Y	"
B	Bolt
N	Nut
W	Washer
R	E-ring
E	–
P	Spring

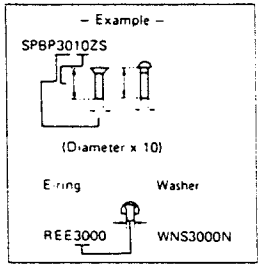
P	Pan head
S	Flat countersunk head
H	Oval countersunk head
D	Binding head
R	Round head
B	Round head
T	Truss head

Symbol letter	Material
S	Steel
E	Stainless steel
C	Cast iron
U	Bronze
B	Brass
P	Phosphor bronze
N	German silver
Y	Brass
A	Aluminum
Z	Zinc-alloy
K	Polycarbonate

1-1 Type of screw

P	Cross-Recessed head screw
A	Tapping screw
B	Tapping screw
T	Tapping screw
E	Tapping screw

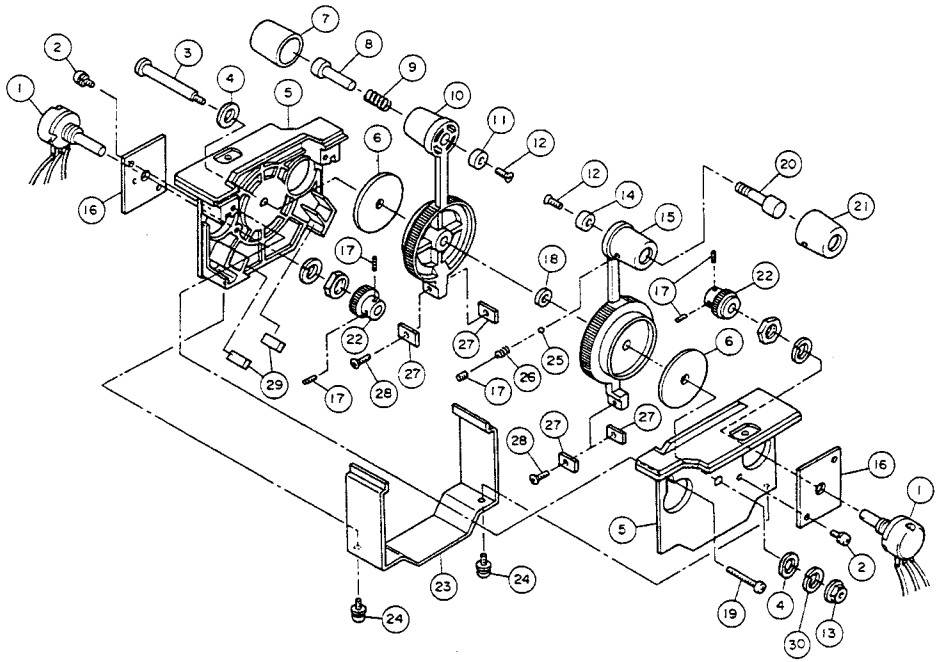
1-2 Diameter and Length of screw



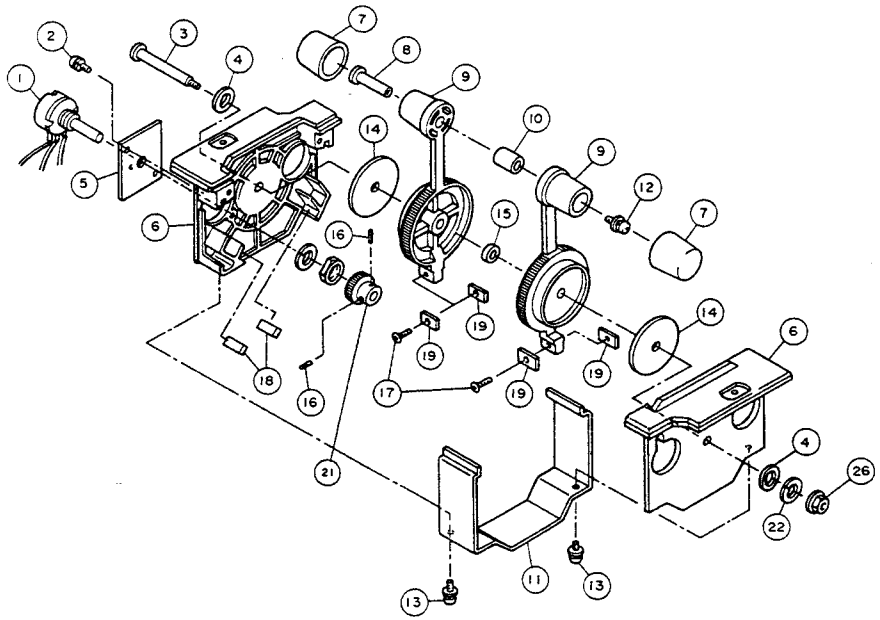
Surface treatment

Symbol letter	Surface treatment
Z	Galvanization, dichromic acid treatment (MFZn2-C)
N	Nickel plating (MFNi2, MFNi1)
R	Chrome plating (MBCr2, MBCr1)
G	Silver plating (SP4)
W	Nichrome platings
P	Phosphite treatment
B	Bronze plating
M	Black coloring after galvanization
A	Red coloring after galvanization
C	Blue coloring after galvanization
T	Green coloring after galvanization
V	Violet coloring after galvanization
F	Iron with black coloring

6.1 MIX/SE LEVER ASS'Y



Symbol No.	Part No.	Part Name	Description
1	SCV0289-001	V. Resistor	1 kΩ B
2	SPSP3006Z	Screw	M3 x 6
3	SC40708-001	Spindle	
4	WNS6000N	Washer	
5	SC20087-001	Case	
6	SC40719-001	F. Spacer	
7	SC40711-001	Knob-1	
8	SC40709-001	Button-1	
9	SC40718-001	Spring-2	
10	SC30321-001	Lever-1	
11	SC40715-001	Guide	
12	SSSP3008N	Screw	M3 x 8
13	NFZ5000Z	F. Nut	
14	SC40715-002	Guide	
15	SC30322-001	Lever-2	
16	SC40721-001	Bracket	
17	YFS3003F	Set Screw	
18	SC40716-002	Spacer	
19	SPSP3016N	Screw	
20	SC40710-001	Button-2	
21	SC40712-001	Knob-2	
22	SC40713-001	Gear	
23	SC30327-001	Cover	
24	LPSP3006Z	Screw	M3 x 6
25	SC40465-024	Steel Ball	
26	SC40717-001	Spring-1	
27	SC40720-001	M. Base	
28	SSSP2605N	Screw	M2.6 x 5
29	SC40725-001	M. Rubber	Glued to (5)
30	WLS6000M	Washer	



Symbol No.	Part No.	Part Name	Description
1	SCV0289-001	V. Resistor	1 kΩ B
2	SPSP3006Z	Screw	M3 x 6
3	SC40708-001	Spindle	
4	WNS6000N	Washer	
5	SC40721-001	Bracket	
6	SC20087-001	Case	
7	SC40711-002	Knob-1	Glued to (9)
8	SC40727-001	Shaft	
9	SC30321-001	Lever-1	
10	SC40728-001	Sleeve	
11	SC30327-001	Cover	
12	DPSP3006Z	Screw	
13	LPSP3006Z	"	
14	SC40719-001	F. Spacer	
15	SC40716-002	Spacer	
16	YFS3003F	Set Screw	
17	SSSP2605N	Screw	
18	SC40725-001	M. Rubber	Glued to (6)
19	SC40720-001	M. Base	
20	NFZ5000Z	F. Nut	
21	SC40713-001	Gear	
22	WLS6000M	Washer	

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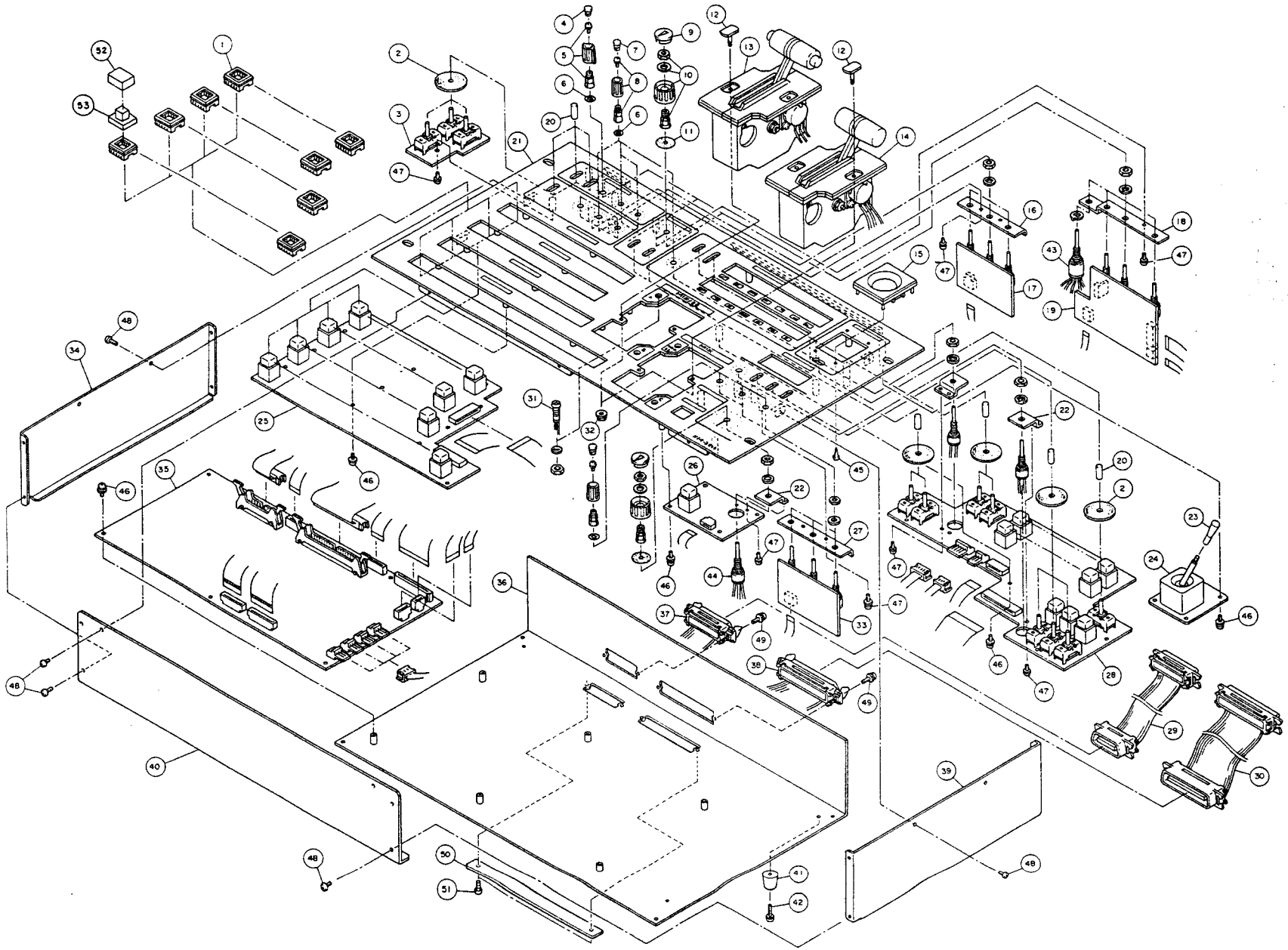
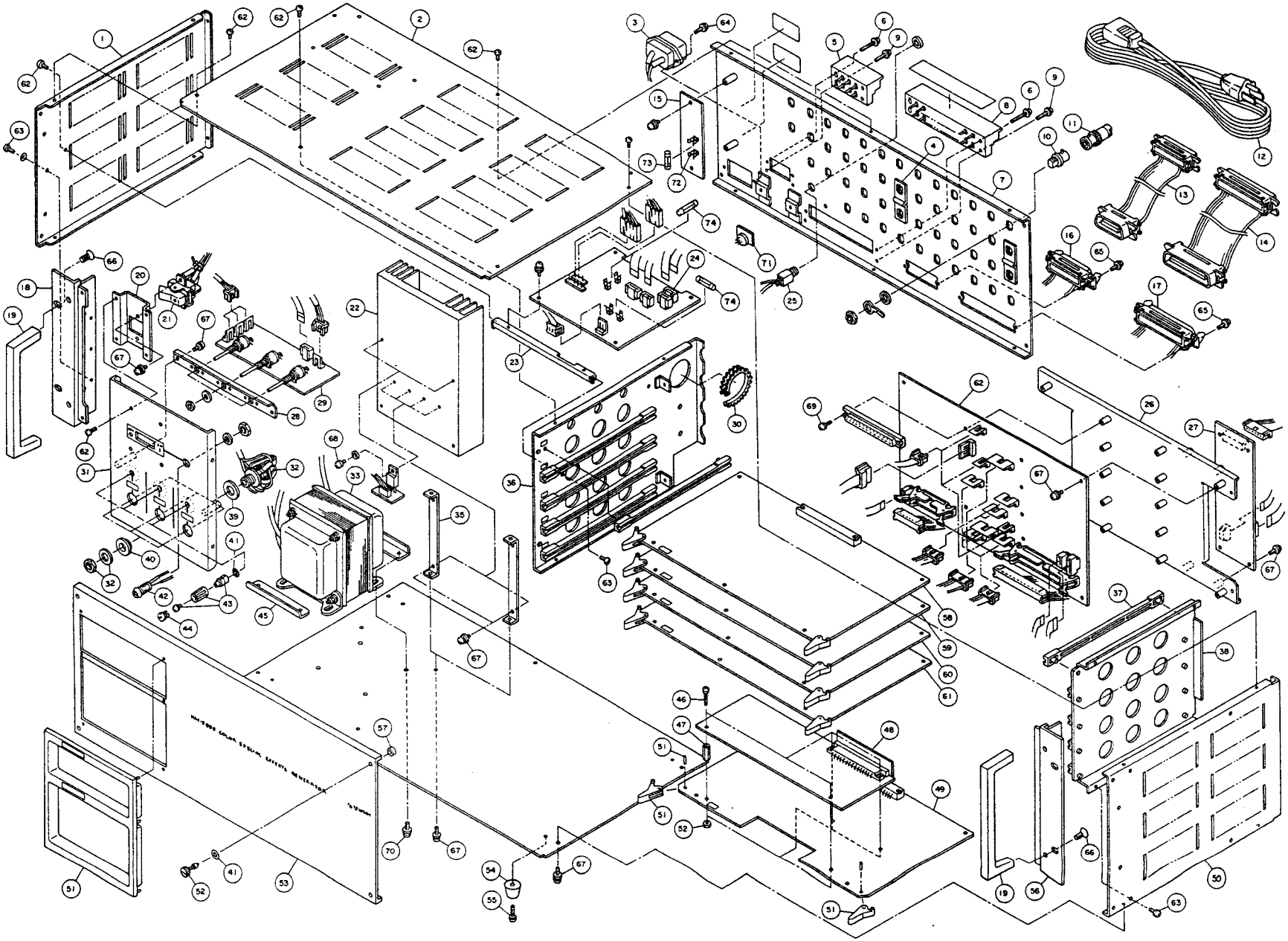
6.3 CONTROL UNIT ASS'Y



Symbol No.	Part No.	Part Name	Description
⚠ 1	SC40695-001	SW. Escutcheon	Glued
2	SC40392-001	Spacer	
3	–	SB-3 Board Ass'y	
4	SC40865-021	Knob Cap	
5	SC40684-021	Knob	
6	SC40724-001	Spacer	
7	SC40685-021	Knob Cap	
8	SC40683-021	Knob	
9	SC40687-021	Knob Cap	
10	SC40686-021	Knob	
11	SC40724-002	Spacer	
12	SC40741-001	Screw	
13	–	Fader 1 Ass'y	
14	–	Fader 2 Ass'y	
⚠ 15	SC40693-001	P. Escutcheon	
16	SC40690-001	Bracket (2)	
17	–	BCC Board Ass'y	
18	SC40692-001	Bracket (1)	
19	–	CK Board Ass'y	
20	SCV0295-001	Lever	
21	SC10029-022	Control Panel	
22	SC40689-001	VR Bracket	
23	SC40694-001	C. Knob	
24	SCV0293-001	Stick Control	
25	–	SB-1 Board Ass'y	
26	–	AU Board Ass'y	
27	SC40691-001	Bracket (3)	
28	–	SB-2 Board Ass'y	
29	SC30301-24-050	F.C. Ass'y	
30	SC30301-50-050	"	
⚠ 31	SDB-204B-RD	L.E.D.	
32	NFZ4000Z	Nut	
33	–	DS Board Ass'y	
34	SC30307-001	Side Cover (L)	
35	–	LB Board Ass'y	
36	SC30309-001	Chassis	
37	SC30302-24-16	F.C. Ass'y	
38	SC30302-50-16	"	
39	SC30308-001	Side Cover (R)	
40	SC30310-001	Front Cover	
⚠ 41	QZF1510-001	Rubber Foot	
42	LPSP3010Z	Screw	M3 x 10
43	SCV0294-001	Rotary Switch	
44	SCV0291-001	V. Resistor	
45	SBSB2606Z	Screw	
46	DPSP3006Z	"	
47	LPSP3006Z	"	
48	SDSP3006M	"	
49	LPSP2608Z	"	
50	SC40877-001	Plate Cover	
51	SDSP2606M	Screw	
⚠ 52	SCV0326-100	Cap	WHITE (SW Ass'y SCV0292-100)
⚠	" -110	"	RED (" " -110)
⚠	" -120	"	BLUE (" " -120)
⚠	" -130	"	GREEN (" " -130)
⚠	" -140	"	ORANGE (" " -140)
⚠	" -150	"	YELLOW (" " -150)
⚠ 53	SCV0302-100	Lamp Ass'y	5 V 60 mA

6.4 MAIN UNIT ASS'Y



Symbol No.	Part No.	Part Name	Description
1	SC30321-001	Side Cover (L)	
2	SC30311-001	Top Cover	
△ 3	QMC0336-001	AC Socket	NTSC (120 V line)
△	QMC0336-002-BS	"	PAL (220 V/240 V line)
4	SC40757-001	Bracket	
△ 5	SS43159-206	Terminal Board	
6	DPSP3025Z	Ass'y Screw	
7	SC20084-002	Rear Panel	-002 : NTSC
	" -003	"	-003 : PAL
△ 8	SS43159-218	Terminal Board	
9	DPSP3014Z	Ass'y Screw	
10	SCV0306-001	BNC R	
11	SCV0286-001	BNC T. Plug	
△ 12	QMP9003-016	Power Cord	U
△	GP32473-5M0	"	EG
△	GP32474-5M0-BS	"	EK
△	QMP2468-500	"	EA
△ 13	SC30301-24-050	F.C. Ass'y	
△ 14	SC30301-50-050	"	
15	–	FU Board Ass'y	
△ 16	SC30302-24-23	F.C. Ass'y	
△ 17	SC30302-50-16	"	
18	SC30318-001	F. Edge (L)	
19	SC40702-001	Handle	
20	SC40700-001	SW. Bracket	
△ 21	SCV0204-001-BS	Power Switch	PAL
△	GP42873-011	"	NTSC (TV-3)
22	SCV0299-011	Heat Sink	
23	SC40698-001	B. Bracket	
△ 24	–	PS Board Ass'y	
△ 25	QMS3501-013	Jack Ass'y	
26	SC30314-001	B. Panel	
△ 27	–	TL Board Ass'y	
28	SC40701-001	VR Bracket	
29	–	IT Board Ass'y	
△ 30	SS42497	Cat Grommets	
31	SC30320-001	Sub Panel	
32	GP43198-001	Incom. Jack	
△ 33	SCV0297-001	Power Trans.	NTSC (120 V line)
△	SCV0298-001	"	PAL 220 V/240 V line)
34	–	–	
35	SC40697-001	H. Bracket	
36	SC30316-001	Rail Bracket (L)	
△ 37	SCV0303-001	Rail	
38	SC30315-001	Rail Bracket (R)	
△ 39	SC40518-001	Spacer	
△ 40	SC40517-001	Base	
41	SC40724-001	Spacer	
△ 42	SDB-2048-RD	L.E.D.	
43	SC40683-021	Knob	
44	SC40685-021	Knob Cap	
45	SC40699-001	T. Bracket	
46	–	–	
47	SC40723-001	Spacer	
48	–	–	
49	–	–	
50	SC30313-001	Side Cover (R)	

Symbol No.	Part No.	Part Name	Description
△ 51	SC20086-001	F. Escutcheon	
52	SC40703-001	Screw	
53	SC20085-002	Front Panel	
△ 54	QZF1510-001	Rubber Foot	
55	LPSP3010Z	Ass'y Screw	
56	SC30319-001	F. Edge (R)	
57	SC40756-001	Stopper	
58	–	–	
59	–	–	
60	–	–	
61	–	–	
62	SDSP3006M	Screw	
63	SDSP3008M	"	
64	DPSP3010Z	"	
65	LPSP2608Z	"	
66	SSSP5012N	"	
67	DPSP3006M	"	
68	LPSP3008Z	"	
69	LPSP2610Z	"	
70	DPSP4008Z	"	
△ 71	QSR0074-003-BS	Voltage Selector	PAL only
△ 72	E48965-002	Fuse Clip	
△ 73	QMF51U1-1R6	Fuse	NTSC
△	QMF51A2-R80	"	PAL
△ 74	QMF51U1-1R6	"	NTSC
△	QMF51A2-1R6	"	PAL

SECTION 7
CHARTS AND DIAGRAMS

7.1 KEY TO ABBREVIATIONS

A	AMP	: Amplifier
C	COMP	: Comparator
D	D. AMP	: Destribute Amplifier
	DET	: Detector
	DISCRI	: Discriminator
	DIV	: Divider
E	E. SW	: Electronic Switch
	EXT	: External mode
H	H. D	: Horizontal Drive
I	INT	: Internal mode
	INV	: Invertor
L	LIMIT	: Limiter
M	M. M	: Monostable Multivibrator
	MOD	: Modulator
	MONO MOLTI	: Monostable Multivibrator
R	REG	: Regulator
S	SEP	: Separator
	SH. TRIG	: Schumidt Trigger
	SSG	: Sync Signal Generator
	SYNC SEP	: Sync Separator
	SUB	: Subtract
T	THRHLD	: Threshold control
V	V. C. O	: Voltage Control Oscillator
	V. D	: Vertical Drive
	V. SYNC SEP	: Vertical Sync Separator

NOTES:

1. Voltage in schematics are DC-measured with a degital voltmeter.
2. Replacing shaded (▨) parts, be sure to use parts specified for safety purposes.

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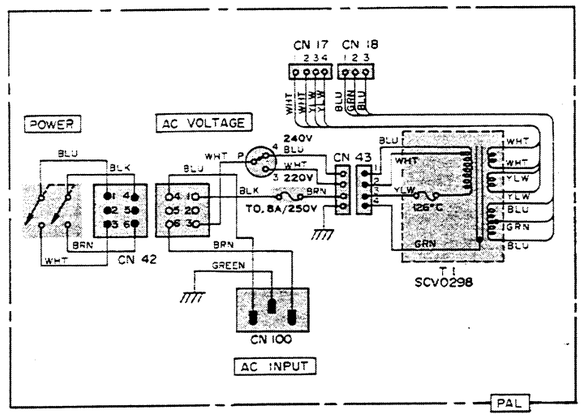
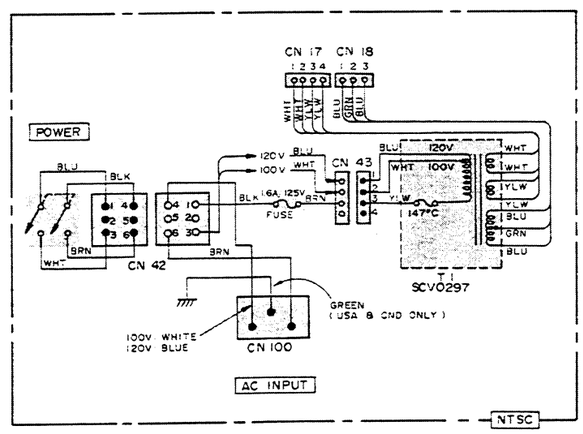
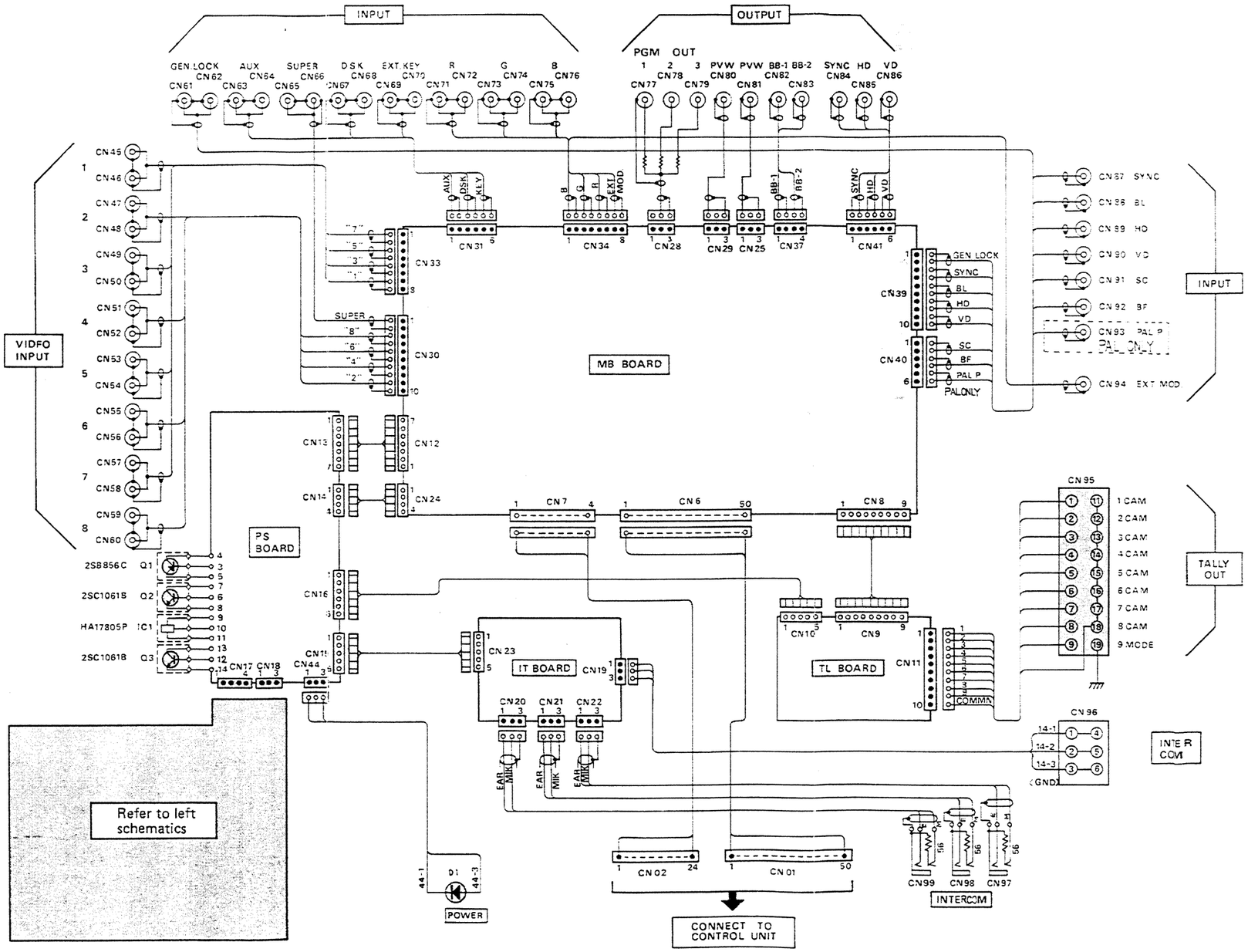
7.2 MAIN UNIT

7.2.1 MAIN UNIT OVERALL WIRING



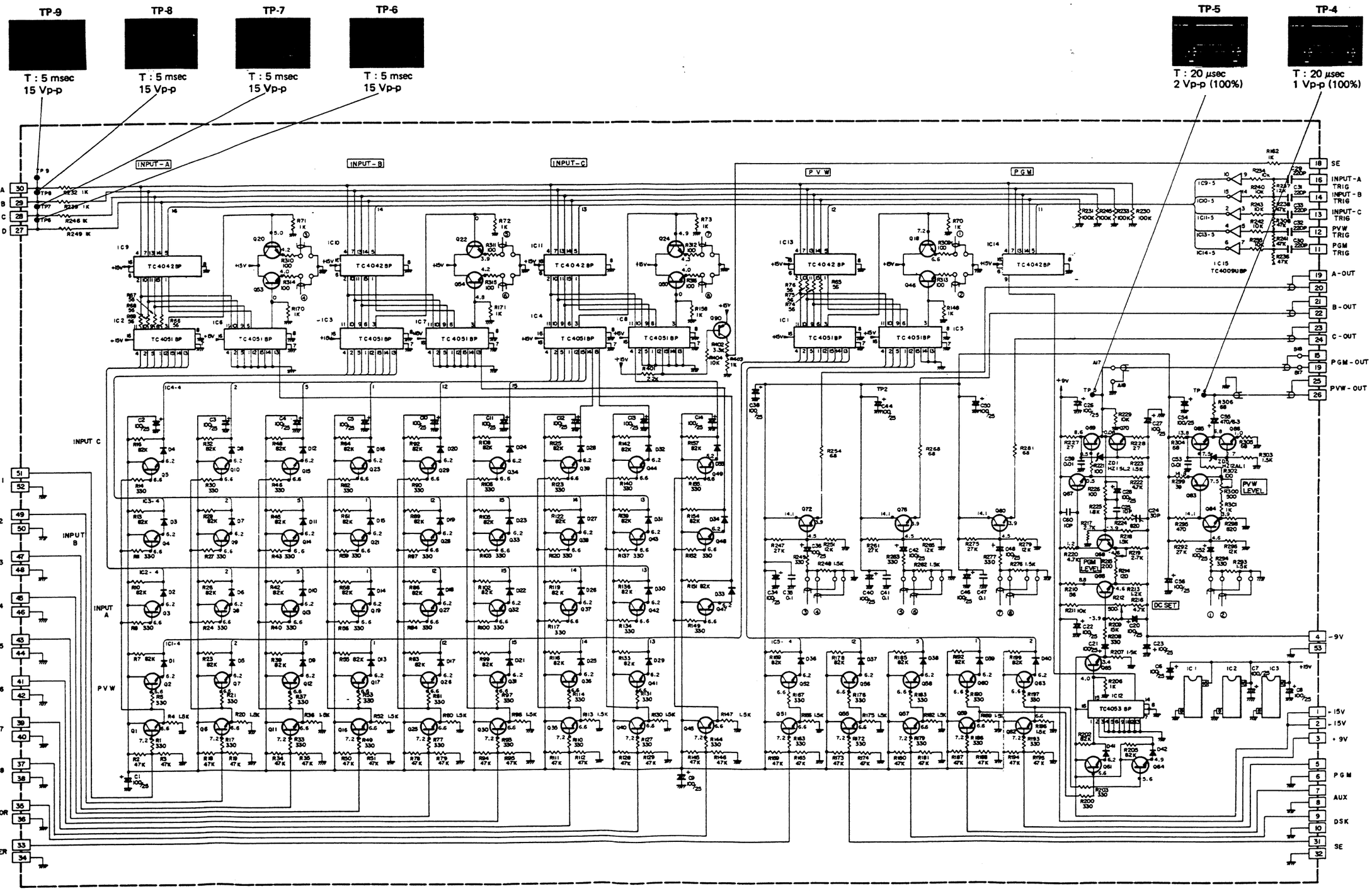




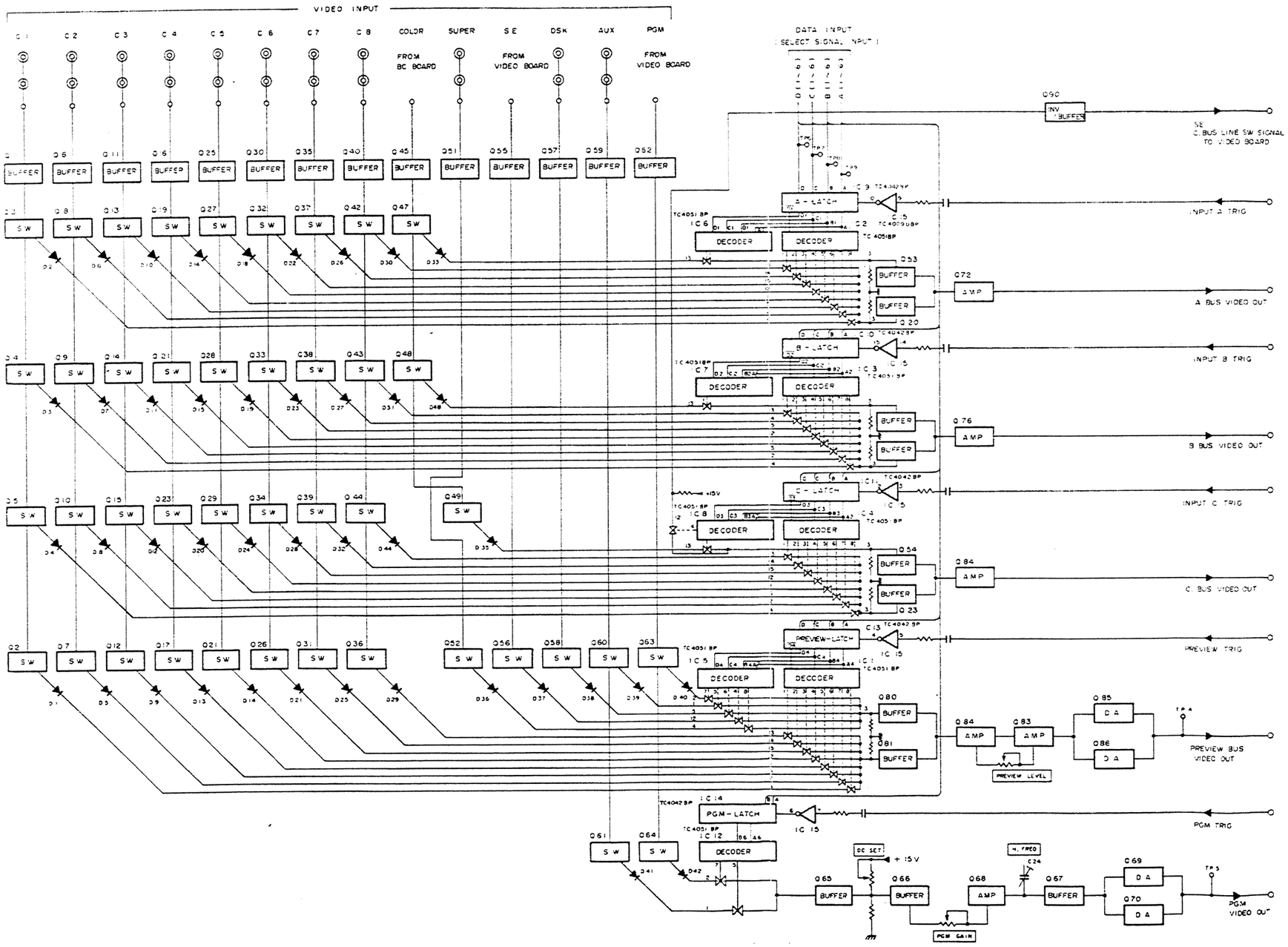
7-3 OVERALL WIRING (CP SCHEMATIC)

7.2.2 CROSS POINT BOARD SCHEMATIC DIAGRAM (CP BOARD)

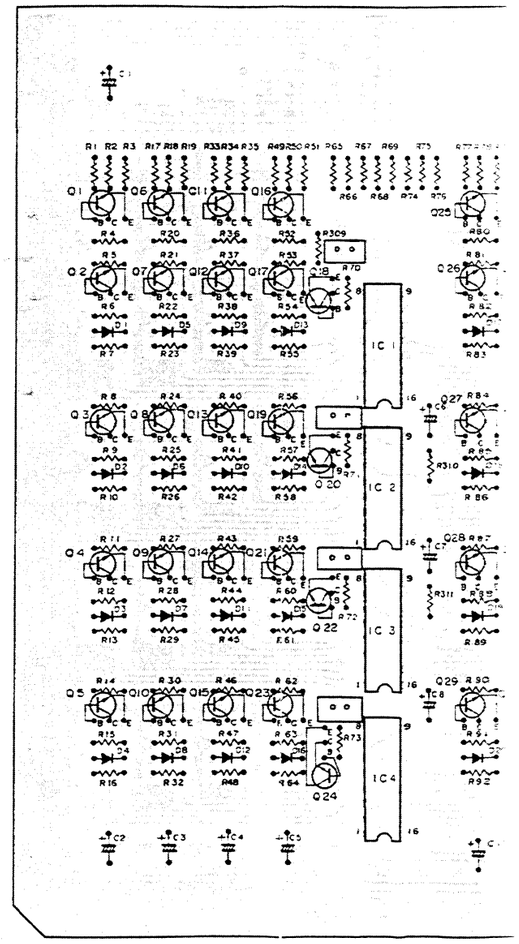
NOTE:
INPUT ; BACK GROUND COLOR (100% SIGNAL)
A, B, C BUS-LINE ; SELECT TO "COLOR"



7.2.3 CP BOARD BLOCK DIAGRAM

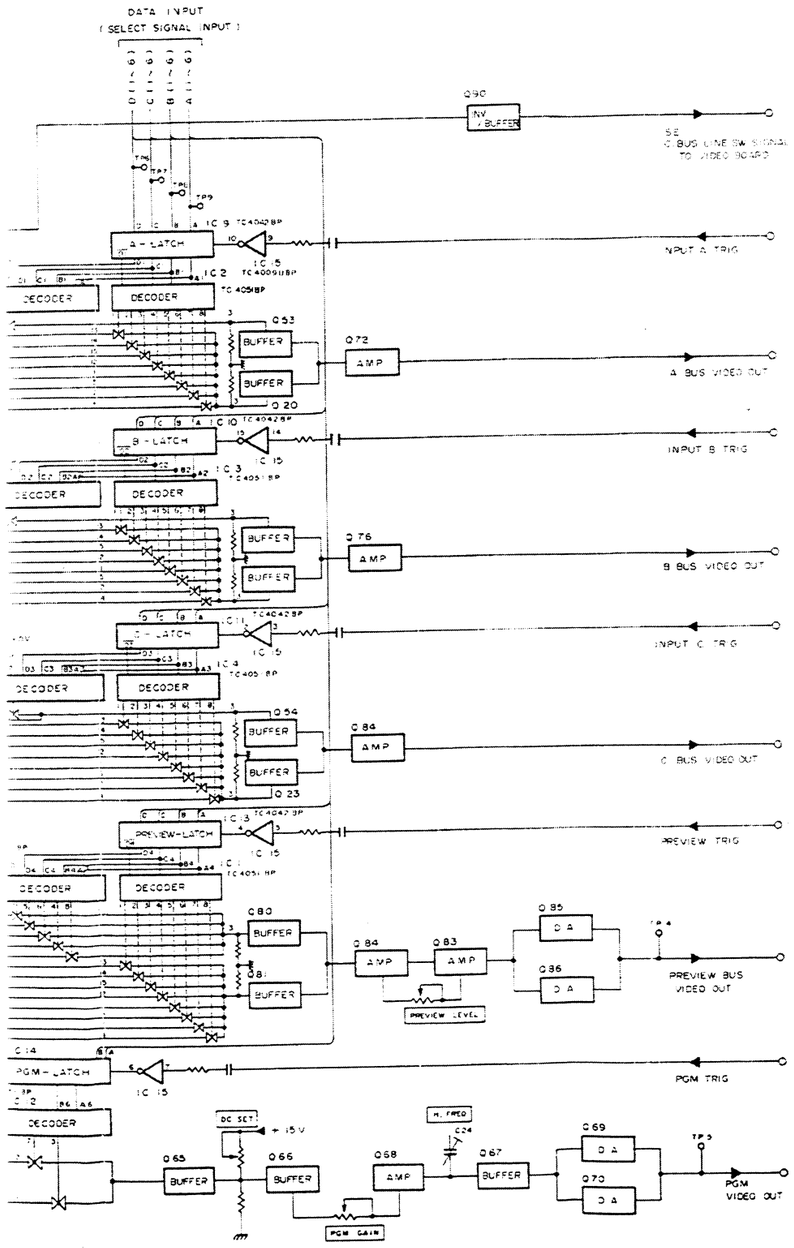


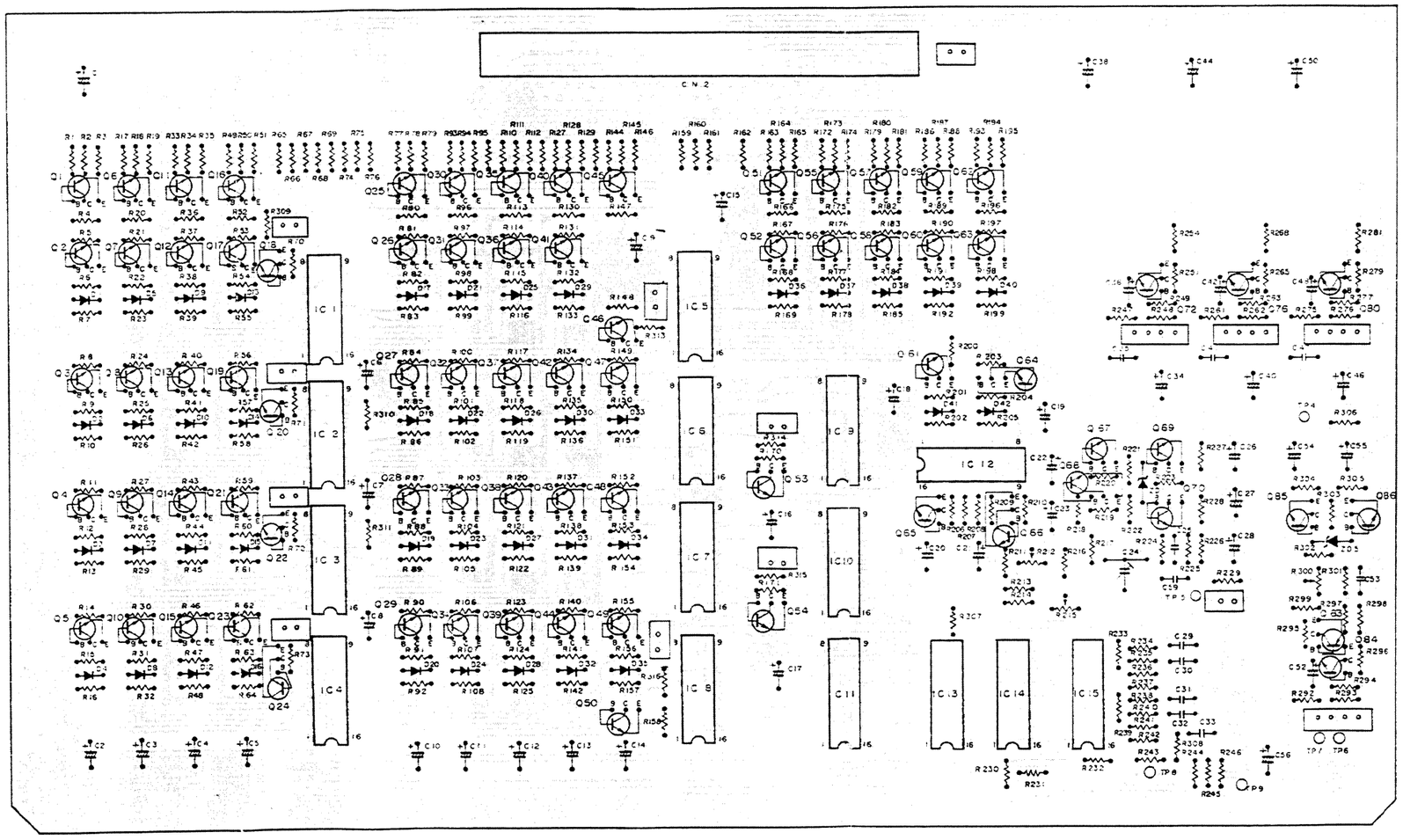
7.2.4 CP CIRCUIT BOARD
— SOLDERING SIDE -



D E F G H I J K L

7.2.4 CP CIRCUIT BOARD
– SOLDERING SIDE





7-5 CP BOARD (VIDEO SCHEMATIC)

7.2.5 VIDEO PROSESS BOARD SCHEMATIC DIAGRAM (VIDEO BOARD)

TP-1
INPUT : BACK GROUND COLOR (100%)
A BUS- LINE : COLOR

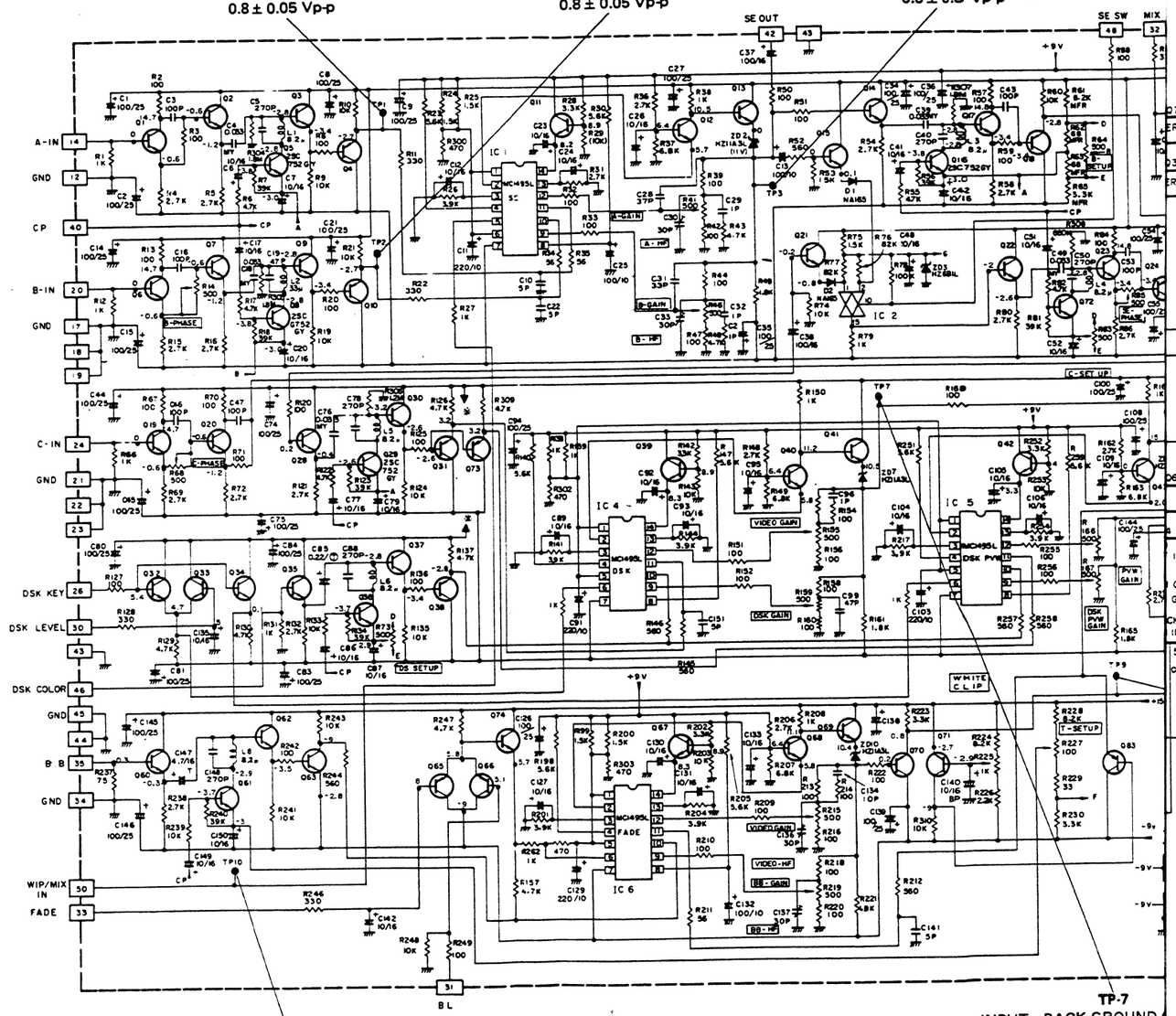
T : 10 μsec/DIV
0.8 ± 0.05 Vp-p

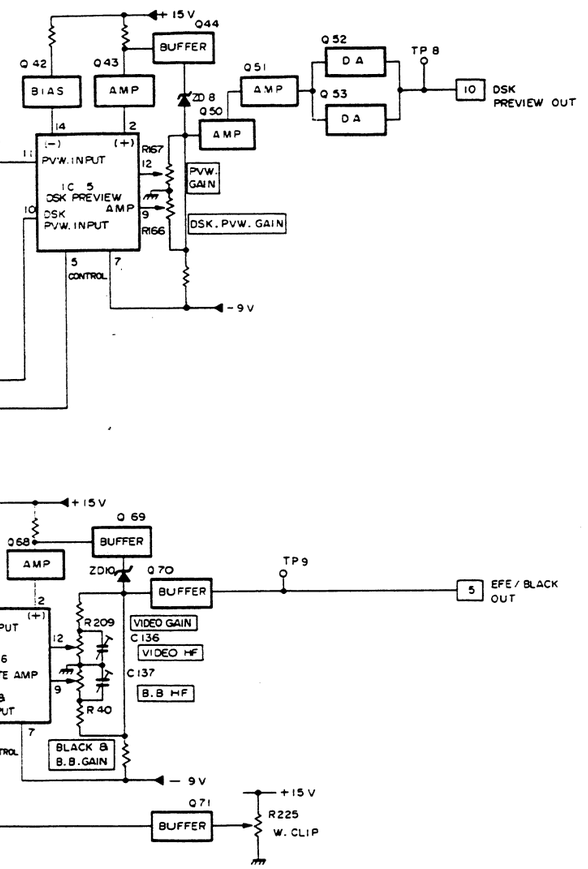
TP-2
INPUT : BACK GROUND COLOR (100%)
B BUS-LINE : COLOR

T : 10 μsec/DIV
0.8 ± 0.05 Vp-p

TP-3
INPUT : BACK GROUND COLOR (100%)
A, B, C BUS-LINE : COLOR
MIX/SE LEVER : EACH SIDE (A, B)
MIX LEVER : MIX/SE SIDE

T : 10 μsec/DIV
0.8 ± 0.5 Vp-p

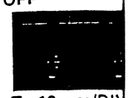




TP-10
INPUT : BACK GROUND COLOR
A BUS-LINE : COLOR

T : 10 μsec/DIV
1 Vp-p

TP-7
INPUT : BACK GROUND
MIX/SE LEVER : A SIDE
MIX LEVER : MIX/SE SID
DSK SW : OFF



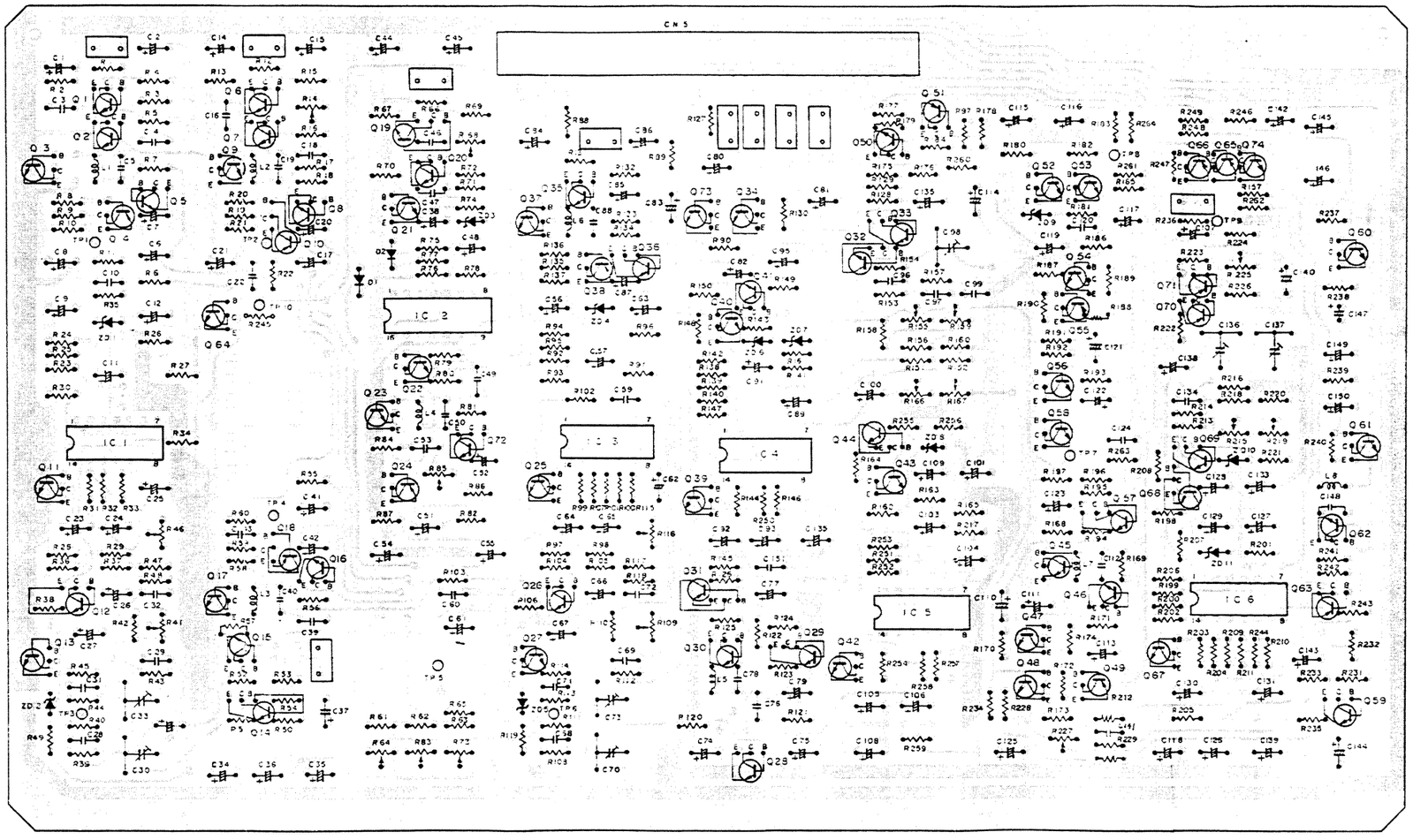
T : 10 μsec/DIV
1 Vp-p

7.2.7 VIDEO CIRCUIT BOARD

– SOLDERING SIDE –

TP 8 — 10 — DSK PREVIEW OUT

5 — EFE / BLACK OUT

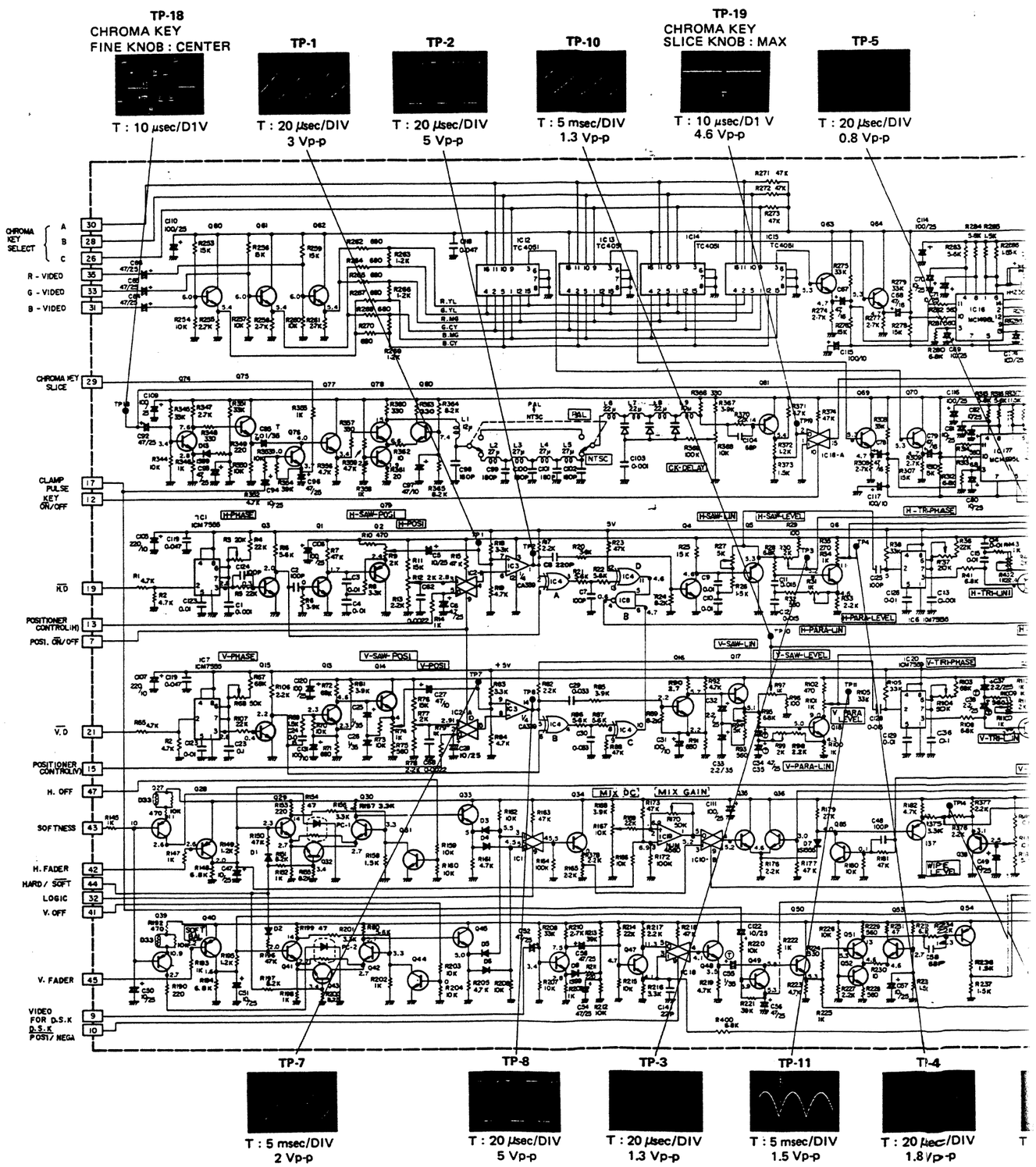


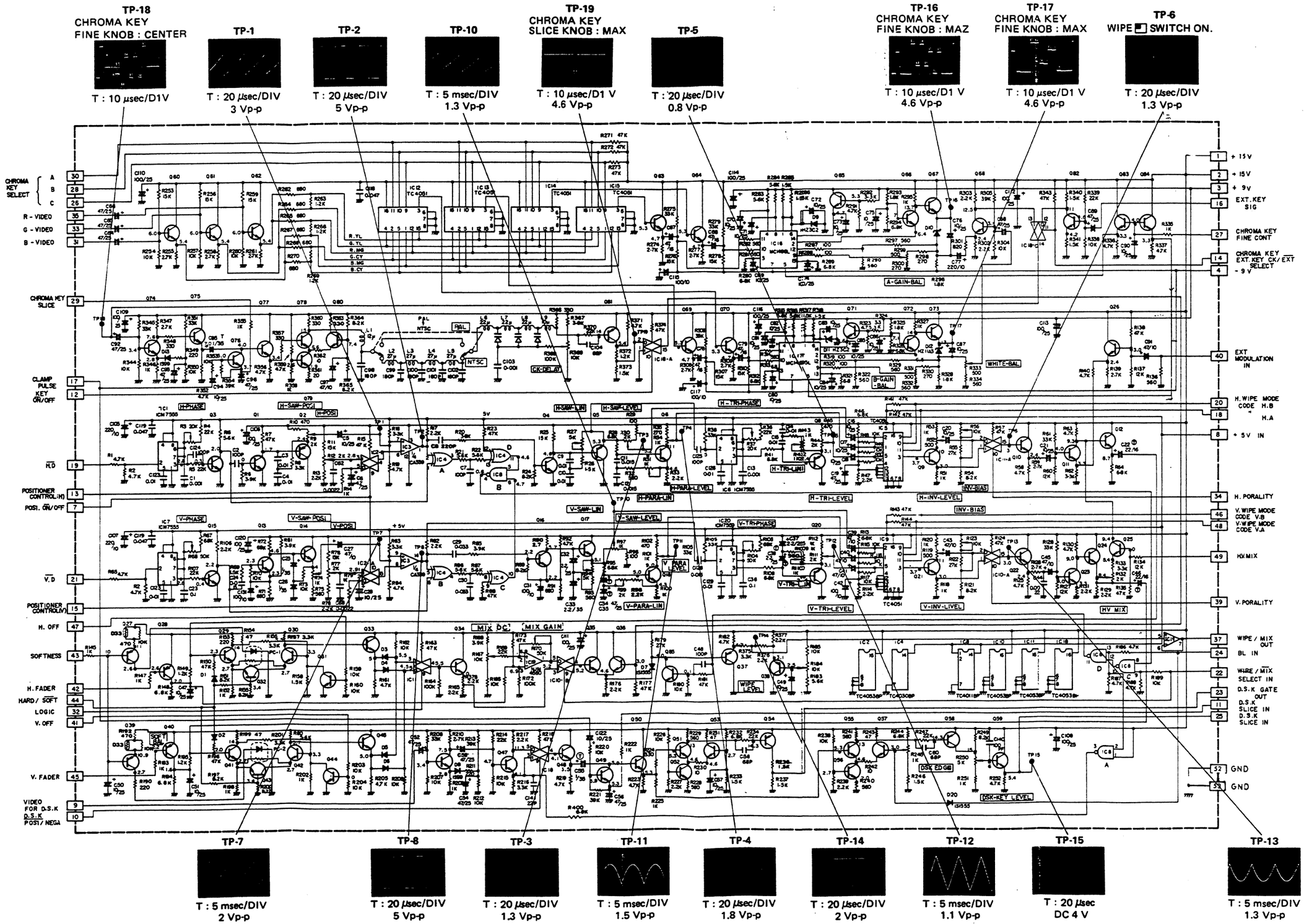
7-7 VIDEO BOARD (WFP SCHEMATIC)

7.2.8 WAVE FORM PROCESS BOARD SCHEMATIC DIAGRAM (WFP BOARD)

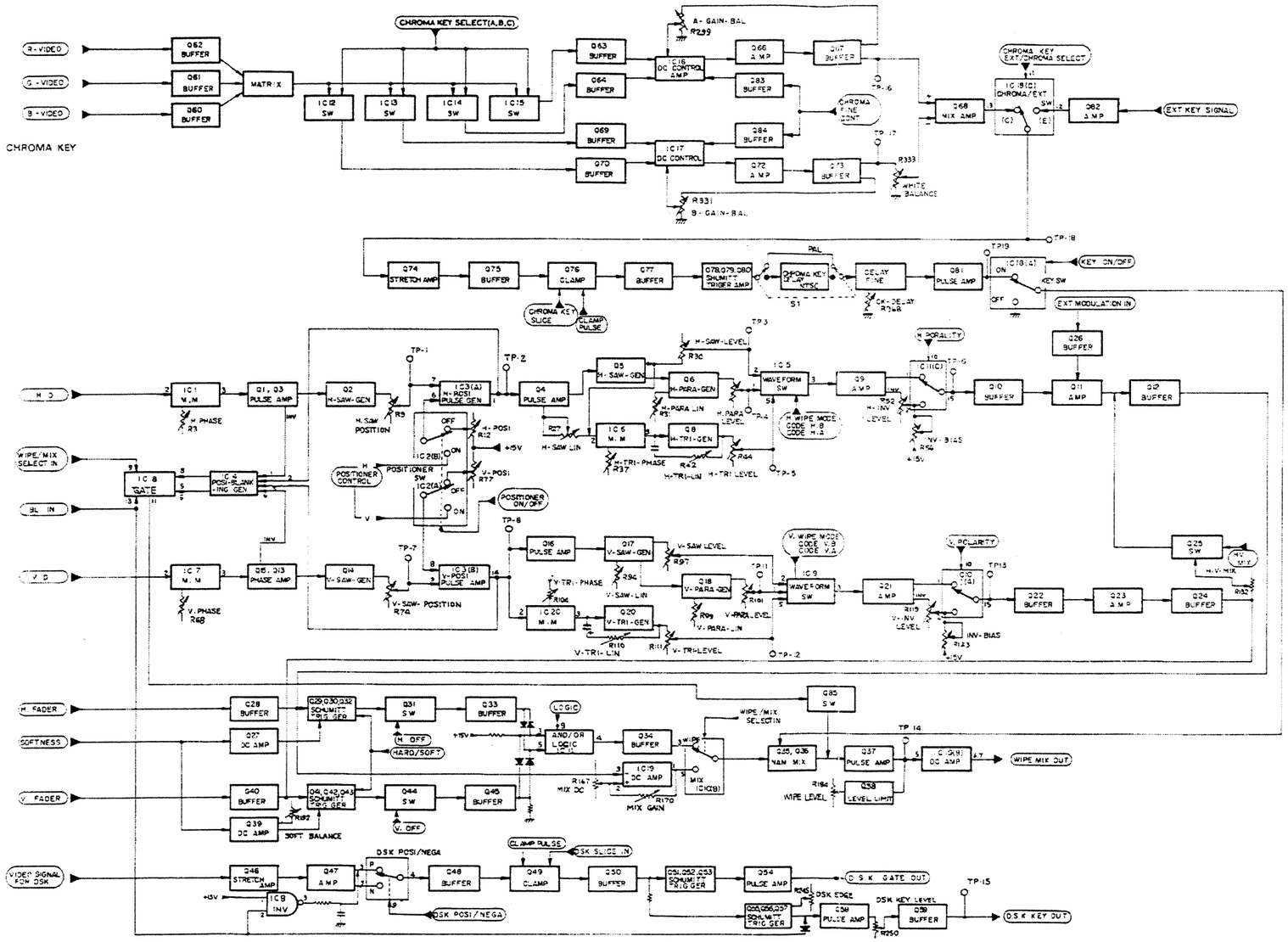
NOTES: (TP-16, 17, 18, 19)

(1) INPUT : CHROMA KEY INPUT; R : G : B – COLOR BAR SIGNAL
(2) CHROMA KEY SWITCH : ON
(3) CHROMA EXT/CK SWITCH : CK
(4) CHROMA COARSE KNOB : B (BLUE)



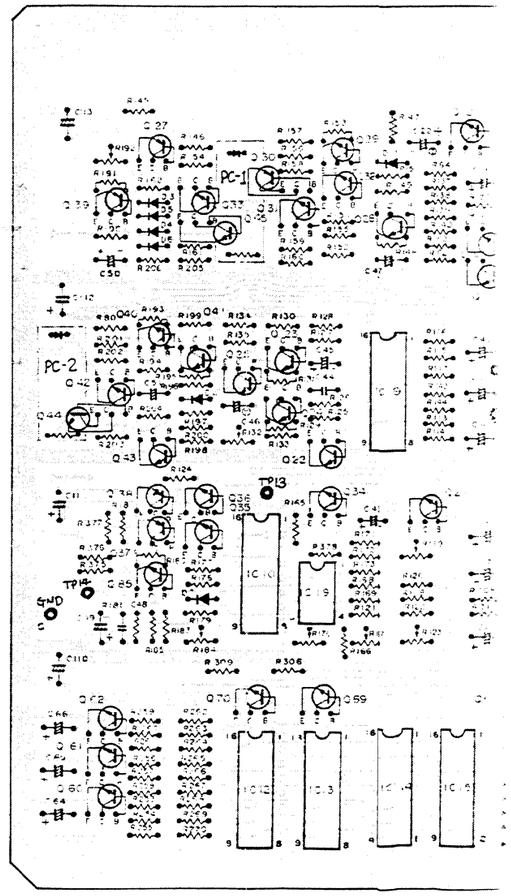

TP-18
CHROMA KEY
FINE KNOB : CENTER
T : 10 μsec/D1V
TP-1
T : 20 μsec/DIV
3 Vp-p
TP-2
T : 20 μsec/DIV
5 Vp-p
TP-10
T : 5 msec/DIV
1.3 Vp-p
TP-19
CHROMA KEY
SLICE KNOB : MAX
T : 10 μsec/D1 V
4.6 Vp-p
TP-5
T : 20 μsec/DIV
0.8 Vp-p
TP-16
CHROMA KEY
FINE KNOB : MAZ
T : 10 μsec/D1 V
4.6 Vp-p
TP-17
CHROMA KEY
FINE KNOB : MAX
T : 10 μsec/D1 V
4.6 Vp-p
TP-6
WIPE SWITCH ON.
T : 20 μsec/DIV
1.3 Vp-p
CHROMA KEY SELECT
R - VIDEO
G - VIDEO
B - VIDEO
CHROMA KEY SLICE
CLAMP PULSE KEY ON/OFF
RD
POSITIONER CONTROL(H)
POSI. ON/OFF
V.D
POSITIONER CONTROL(V)
H. OFF
SOFTNESS
H. FADER
HARD/SOFT LOGIC
V. OFF
V. FADER
VIDEO FOR D.S.K
D.S.K POSI/NEGA
+ 15V
+ 15V
+ 9V
EXT. KEY SIG
CHROMA KEY FINE CONT
CHROMA KEY EXT KEY ON/EXT SELECT
- 9V
EXT MODULATION IN
H.WIPE MODE CODE H.B
H.A
+ 5V IN
H. PORALITY
V. WIPE MODE CODE V.B
V. WIPE MODE CODE V.A
HV MIX
V. PORALITY
WIPE / MIX OUT
BL IN
WIPE / MIX SELECT IN
D.S.K GATE OUT
D.S.K SLICE IN
D.S.K SLICE IN
GND
GND
TP-7
T : 5 msec/DIV
2 Vp-p
TP-8
T : 20 μsec/DIV
5 Vp-p
TP-3
T : 20 μsec/DIV
1.3 Vp-p
TP-11
T : 5 msec/DIV
1.5 Vp-p
TP-4
T : 20 μsec/DIV
1.8 Vp-p
TP-14
T : 20 μsec/DIV
2 Vp-p
TP-12
T : 5 msec/DIV
1.1 Vp-p
TP-15
T : 20 μsec
DC 4 V
TP-13
T : 5 msec/DIV
1.3 Vp-p

7.2.9 WFP BOARD BLOCK DIAGRAM



7.2.10 WFP CIRCUIT BOARD

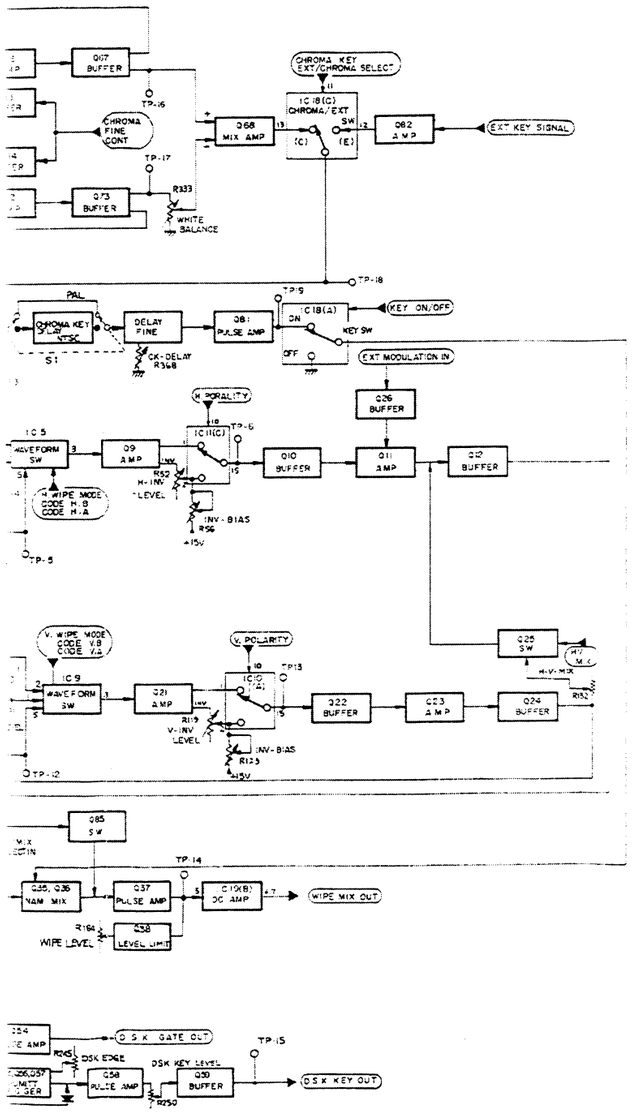
– SOLDERING SIDE –

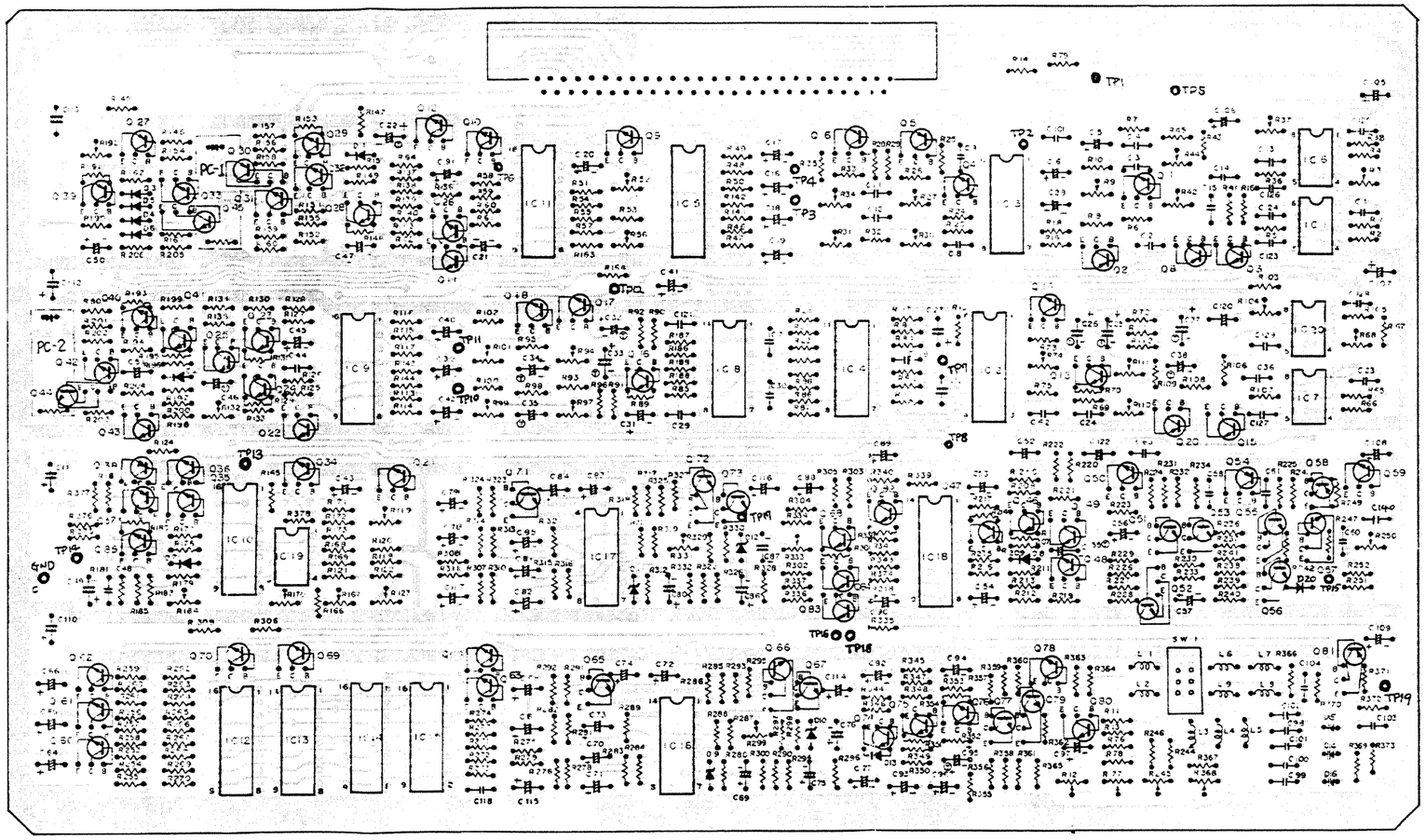


7-9 WFP BOARD (BC SCHEMATIC)

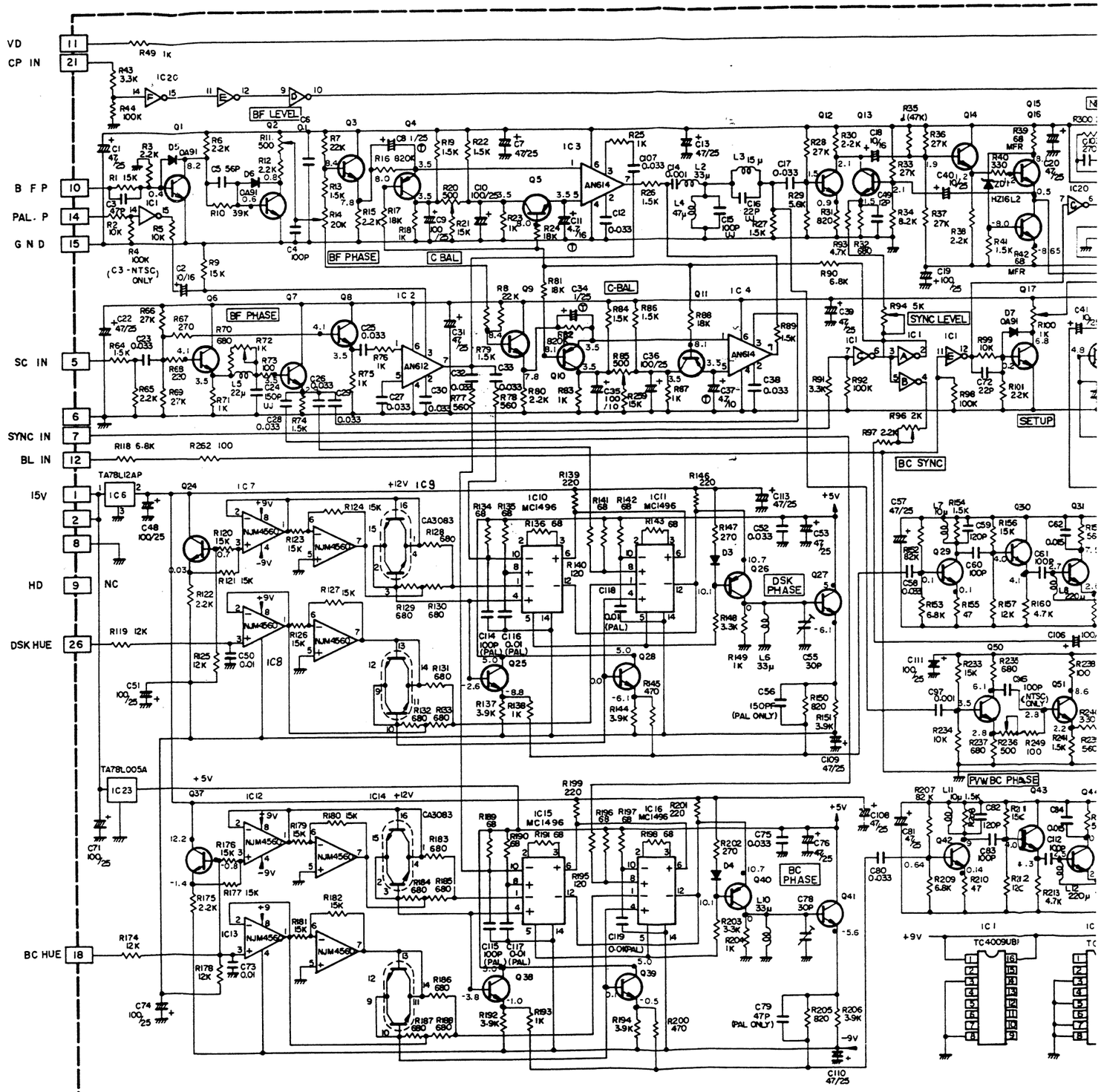
7.2.10 WFP CIRCUIT BOARD

– SOLDERING SIDE –

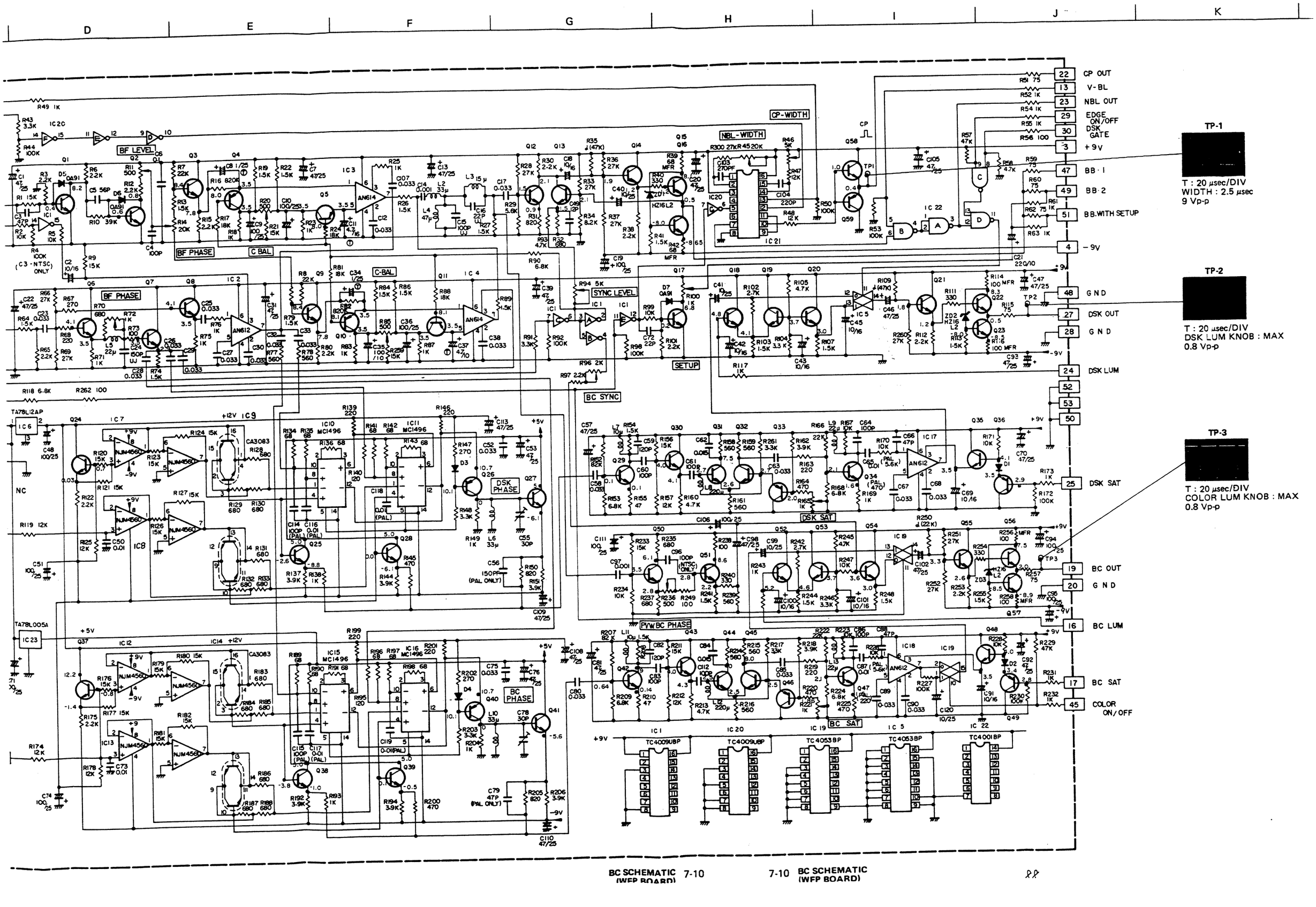




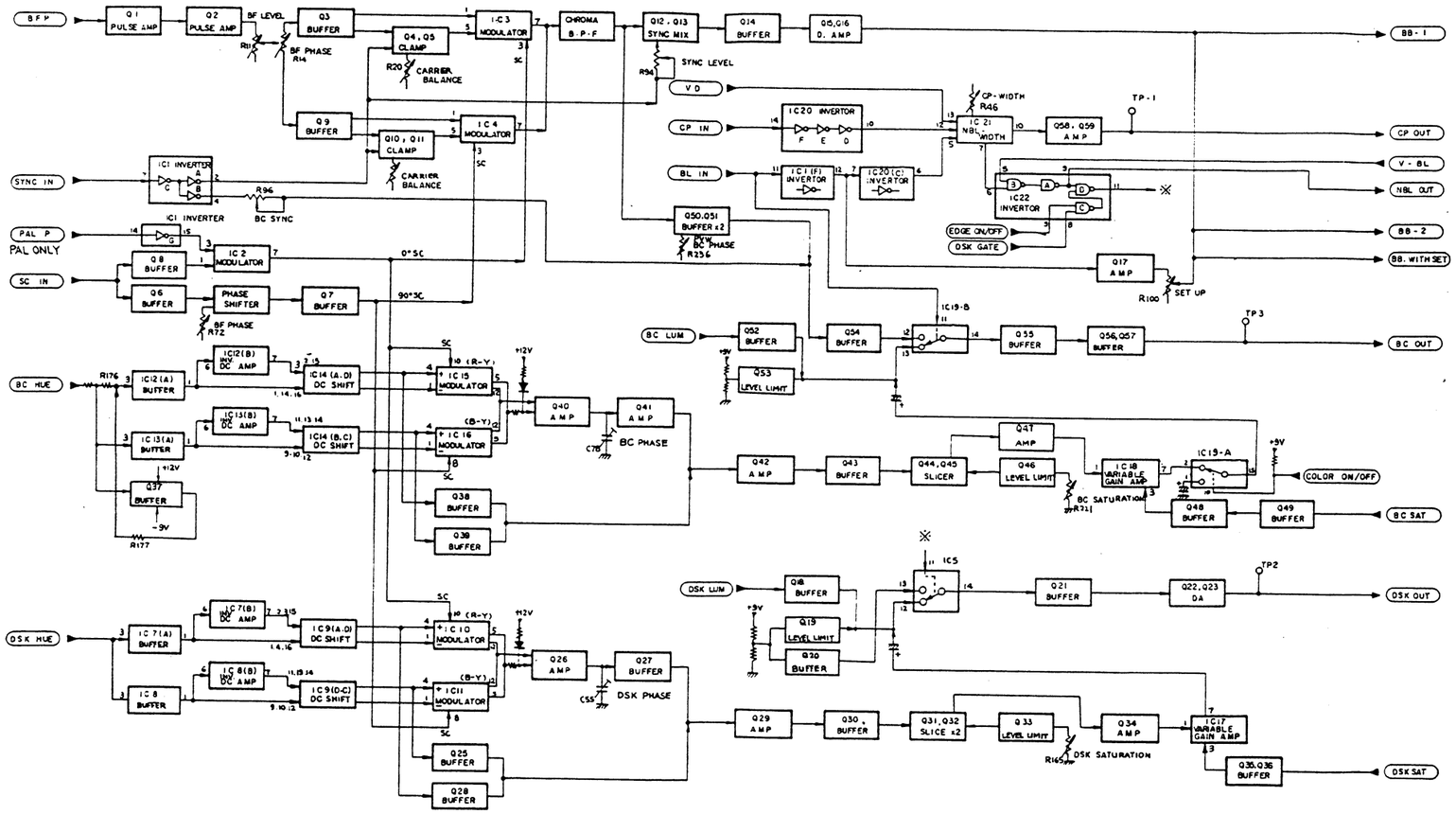
7.2.11 BACK COLOUR BOARD SCHEMATIC DIAGRAM (BC BOARD)



Parts No.	PAL	NTSC
C3	–	47P
C24	68P	150P
C56	150P	–
C79	47P	–
C96	–	100P
C114	100P	–
C115	100P	–
C116	0.01	–
C117	0.01	–
R65	–	2.2 K
R66	6.8 K	27 K
R67	10	270
R68	2.2 K	220
R69	6.8	27 K
R73	1.2 K	100
R169	470	1 K
R170	5.6 K	10 K
R225	220	470
R226	5.6 K	10 K


D
E
F
G
H
I
J
K
CP-WIDTH
NBL-WIDTH
BF LEVEL
BF PHASE
C BAL
C-BAL
SYNC LEVEL
SETUP
BC SYNC
DSK PHASE
BC PHASE
PYW BC PHASE
DSK SAT
BC SAT
CP
CP OUT
V-BL
NBL OUT
EDGE ON/OFF DSK GATE
+9V
BB·1
BB·2
BB.WITH SETUP
-9V
GND
DSK OUT
GND
-9V
DSK LUM
DSK SAT
BC OUT
GND
BC LUM
BC SAT
COLOR ON/OFF
TP-1
T : 20 μsec/DIV
WIDTH : 2.5 μsec
9 Vp-p
TP-2
T : 20 μsec/DIV
DSK LUM KNOB : MAX
0.8 Vp-p
TP-3
T : 20 μsec/DIV
COLOR LUM KNOB : MAX
0.8 Vp-p

7.2.12 BC BOARD BLOCK DIAGRAM



(SSG BOARD)

CN13

1	GND
2	+ 12 V
3	CAMH.D(P)
4	SYNC (N)
5	B.F.P(P)
6	SAMPLE P(P)
7	DELAYEDV.D(N)
8	B.G.P (P)
9	CLAMP P(P)
10	C BL (N)
11	TUBE BL (N)
12	VSI BL (P)
13	VSI MARKER
14	PAL P
15	SC 1
16	GND(GEN LOCK)
17	SC 2
18	PILOT P(P)
19	GENLOCK STS
20	RM 12V
21	BAR/CAM CONTROL
22	GND

BARS SWITCH 21
+12V INPUT 2
GND 1
GENLOCK INPUT 19
GND 16

SC PHASE
COARSE
FINE

ADJUST BLANKING (H)

H BLWIDTH

SC LOCK

DELAYED VD

SC FREQ

IC 8 COMPOSITE SYNC HD44007A

CP BFP

HD

VD

CAMERA HD

H OSC SET

GENLOCKED : 8

GENLOCKED : 0.7 0.9 5.4 0.7

H. PHASE

H. PHASE 2

1/2 H PULSE

RM12V INPUT 20

V. BLWIDTH (NTSC ONLY)

ADJUST BLANKING (V)

15 SC
17 SC
12 V-BL
13 VSI 100% MARKER OUT PUT
4 SYNC (N)
10 COMPOSITE BL (N)
9 CP (P)
11 T. BL (N)
5 BFP (P)
3 CAMERA HD (P)
6 B.G P (P)
18 PILOT PULSE (P)
14
8 SAMPLE P (P)
7 DELAYED VD (N)

T : 20 µsec/DIV
7 Vp-p

T : 0.5 msec/DIV
ODD : 3 H
EVEN : 3.5 H
7 Vp-p

T : 5 msec/DIV
PULS WIDTH : 1 msec
7 Vp-p

Applied a signal to GEN. LOCK INPUT

T : 20 µsec/DIV
7 Vp-p

Applied a signal to GEN. LOCK INPUT

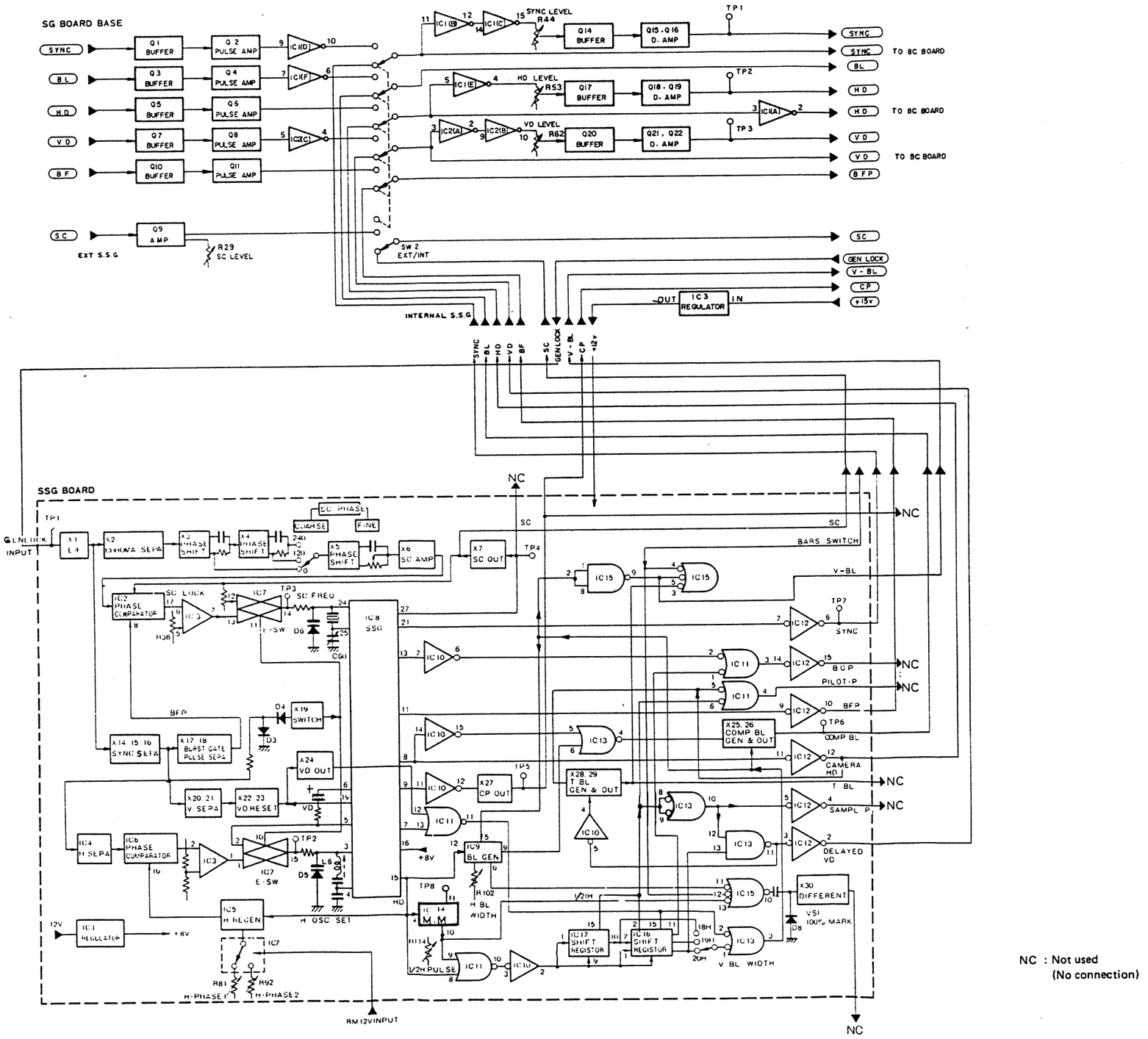
T : 20 µsec/DIV
0.2 Vp-p

Applied a signal to GEN. LOCK INPUT

T : 20 µsec/DIV
200 mVp-p

7.2.15 (1) SG BOARD BLOCK DIAGRAM

– NTSC –

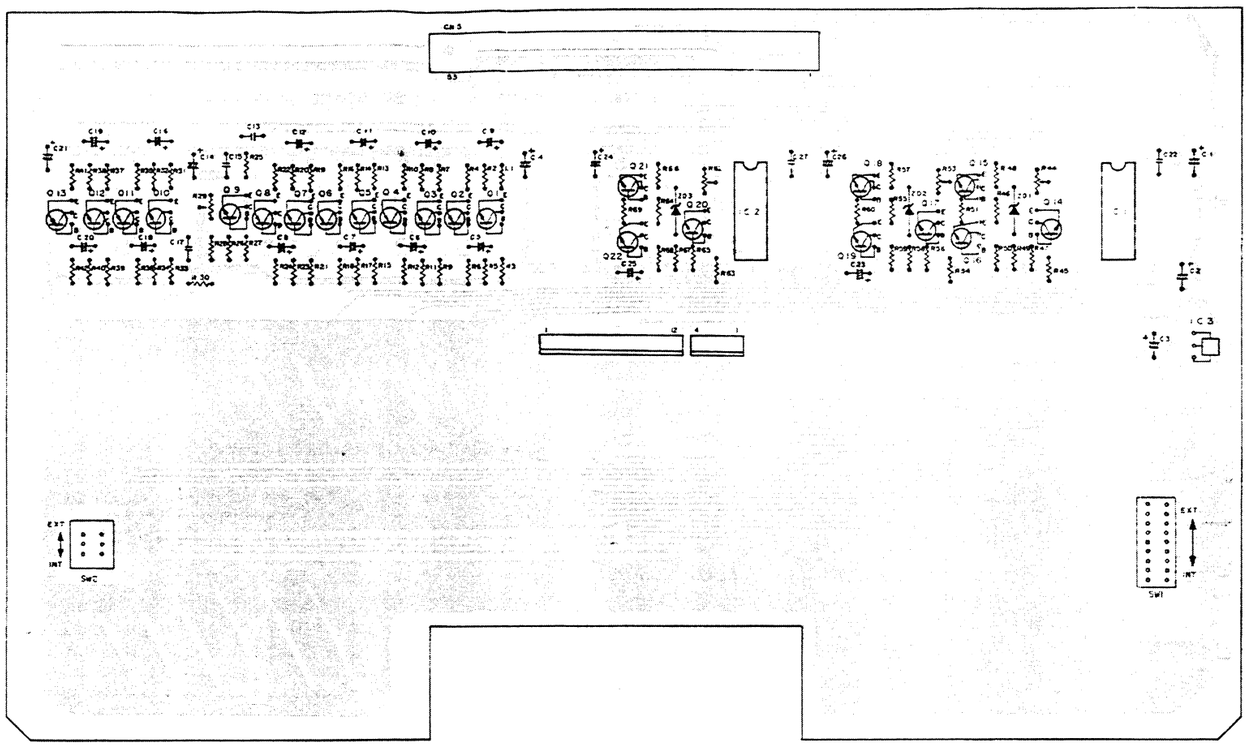


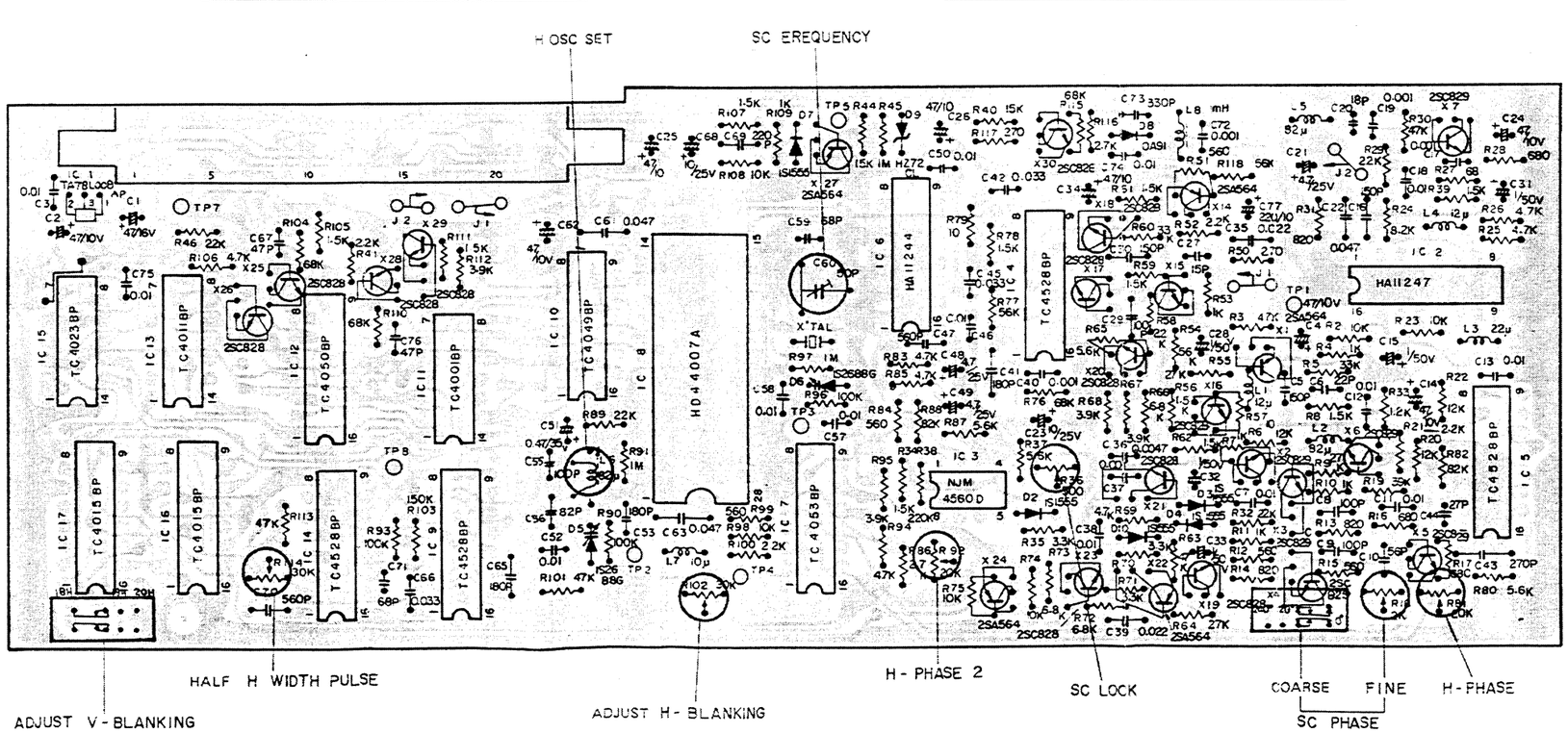
7.2.16 (1) SG CIRCUIT BOARD

– SOLDERING SIDE – (NTSC)

(SG BOARD BASE)

PARTS No.	PAL	NTSC
Q12	2SC828(R)	–
Q13	2SA564(R)	–
R37	QRD167J-473	–
R38	" -750	–
R39	" -473	–
R40	" -152	–
R41	" -473	–
R42	" -152	–
C19	QET61EM-106	–
C20	" -106	–
C22	–	QFM31HK-104

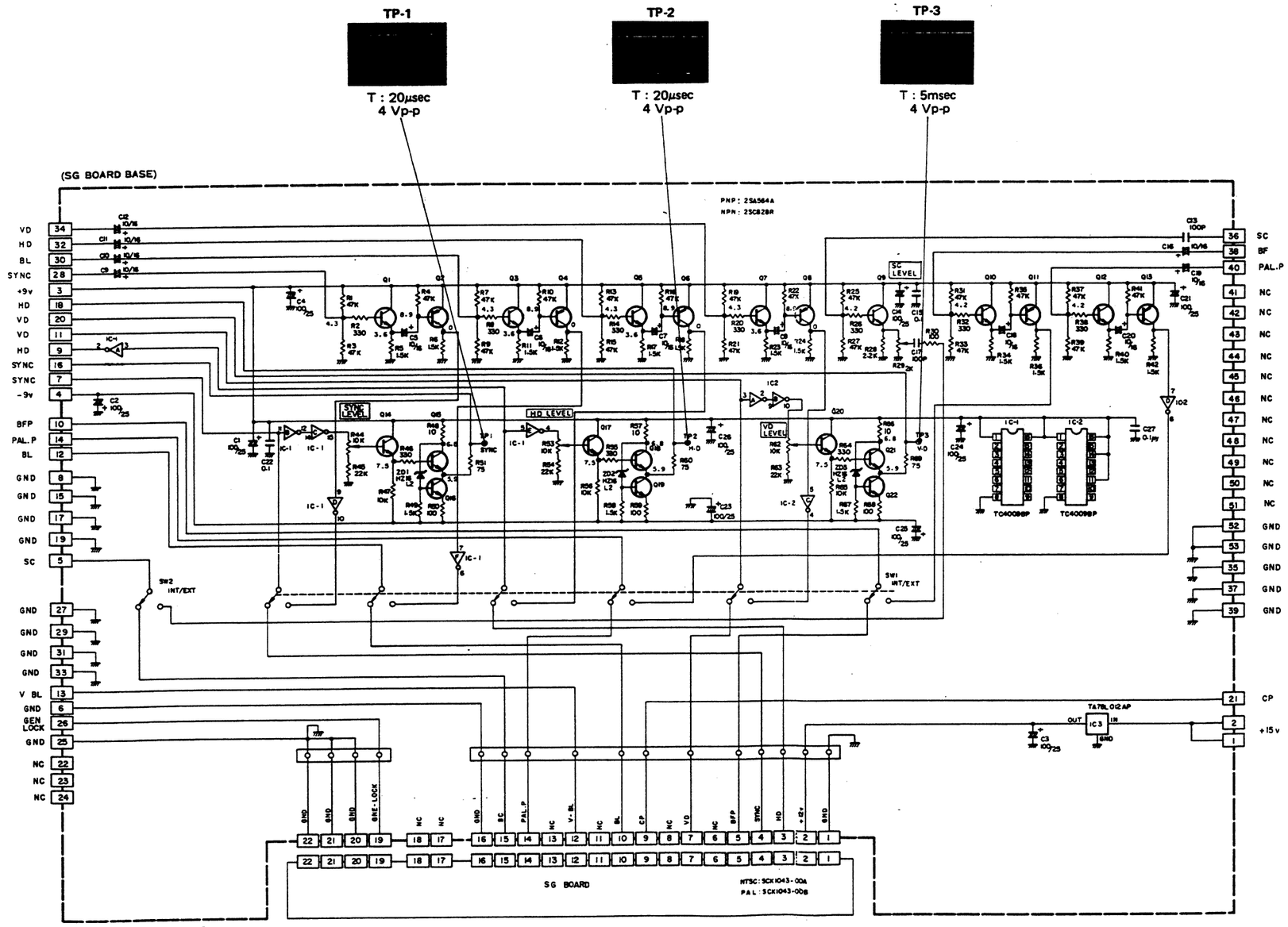




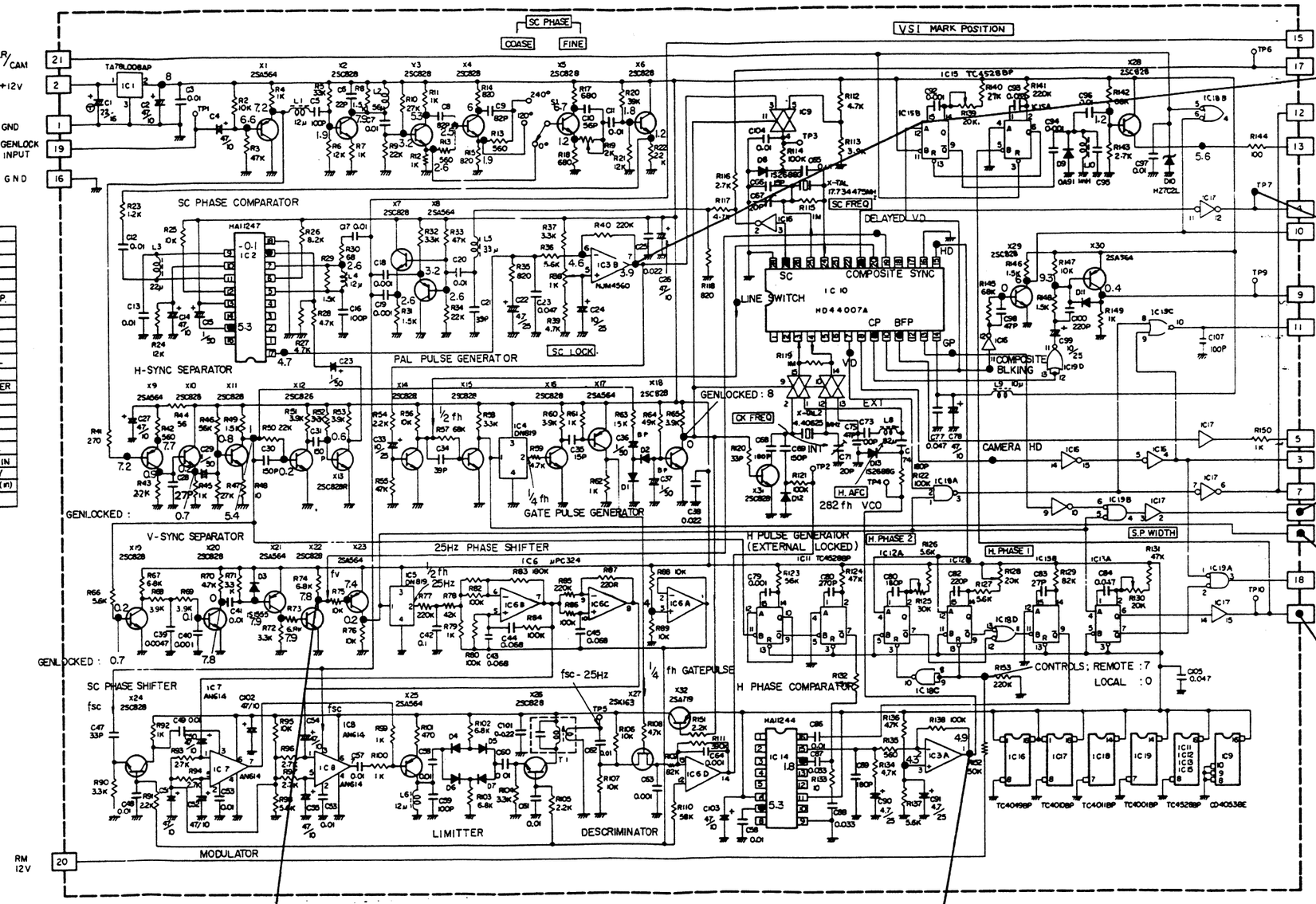
7-13 SG BOARD (NTSC) (SG SCHEMATIC)(PAL)

7.2.14(2) SYNC SIGNAL GENERATE SCHEMATIC DIAGRAM (SG BOARD)

– PAL –



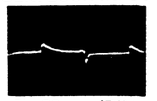
PARTS No.	PAL	NTSC
Q12	2SC828(R)	–
Q13	2SA564(R)	–
R37	QRD167J-473	–
R38	" -750	–
R39	" -473	–
R40	" -152	–
R41	" -473	–
R42	" -152	–
C19	QET61EM-106	–
C20	" -106	–
C22	–	QFM31HK-104



CN 13

1	GND
2	+12V (in)
3	H.D
4	SYNC
5	B.F.P
6	SAMPLE P.
7	V.D
8	B.G.P
9	C.P
10	BL
11	TUBE BL
12	VSI. BL
13	VSI MARKER
14	PAL P.
15	SC-1
16	G N D
17	SC-2
18	PILOT P
19	GENLOCK IN
20	R M 12 V
21	BAR/CAM (in)
22	G N D

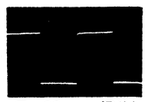
Applied a signal to GEN. LOCK INPUT



T : 20 μsec/DIV
200 mVp-p

T : 20 μsec/DIV
7 Vp-p

T : 0.2 msec/DIV
ODD : 4.5 H
EVEN : 5 H
7 Vp-p



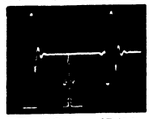
T : 20 μsec/DIV
7 Vp-p

T : 5 msec/DIV
PULS WIDTH : 1msec
7 Vp-p

Applied a signal to GEN. LOCK INPUT

T : 20 μsec/DIV
7 Vp-p

Applied a signal to GEN. LOCK INPUT



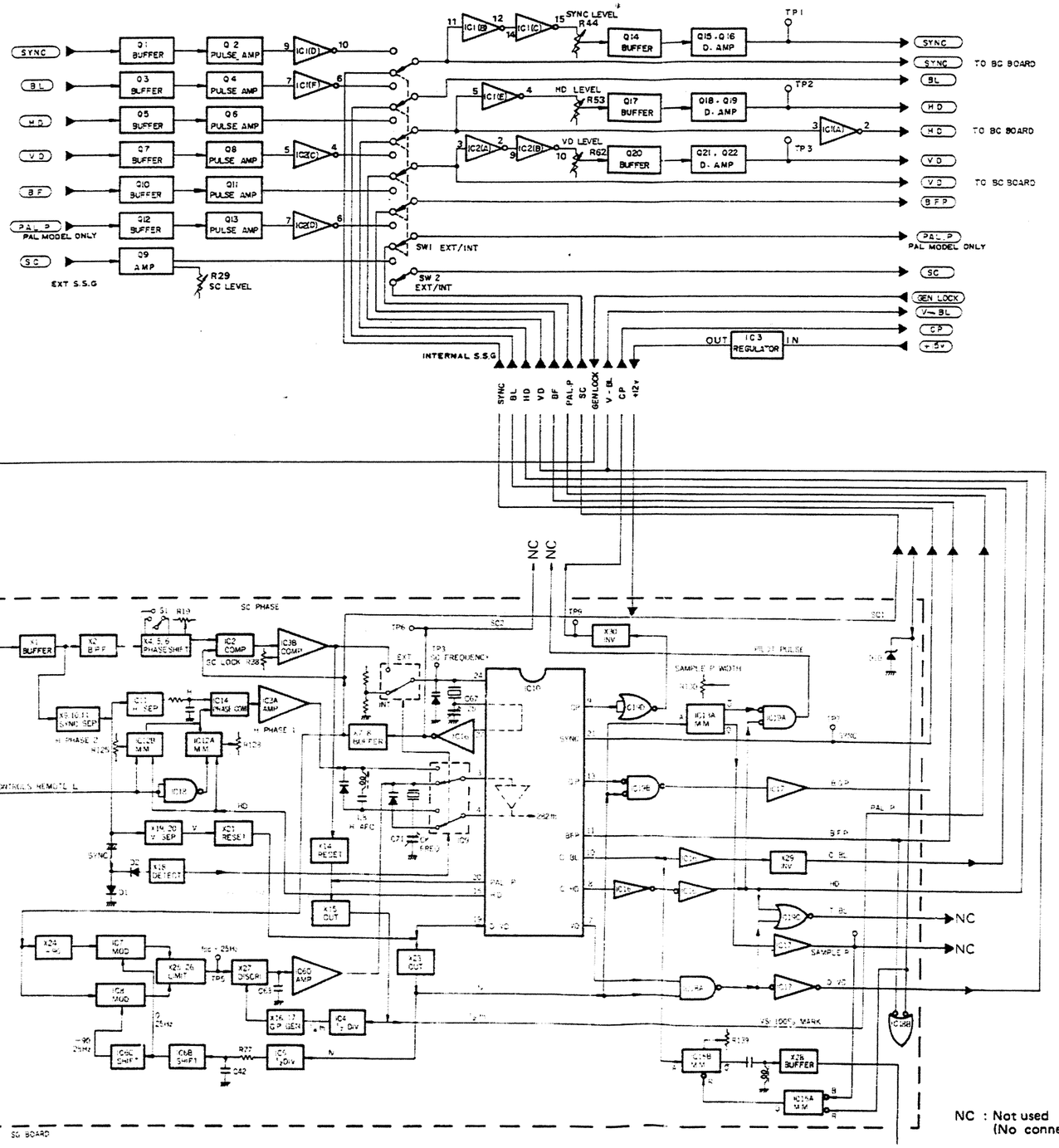
T : 20 μsec/DIV
4 Vp-p

NTSC
–
–
–
–
–
–
–
–
–
–
QFM31HK-104

7-14 SG SCHEMATIC (PAL) (SG BOARD)(NTSC)

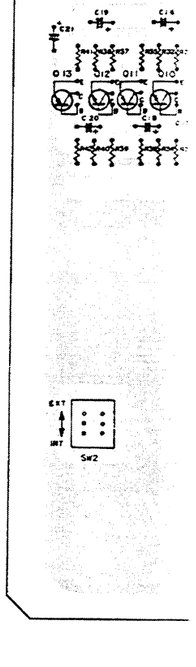
7.2.15 (2) SG BOARD BLOCK DIGARAM

– PAL –



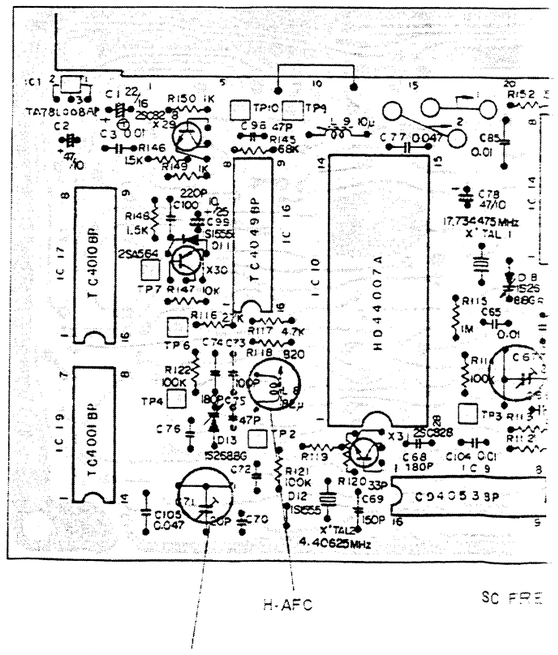
7.2.16 (2) SG CIRCUIT BOARD

– SOLDERING SIDE – (PAL)



(SG BOARD BASE)

PARTS No.	PAL	NTSC
Q12	2SC828(R)	–
Q13	2SA564(R)	–
R37	QRD167J-473	–
R38	" -750	–
R39	" -473	–
R40	" -152	–
R41	" -473	–
R42	" -152	–
C19	QET61EM-106	–
C20	" -106	–
C22	–	QFM31HK-104

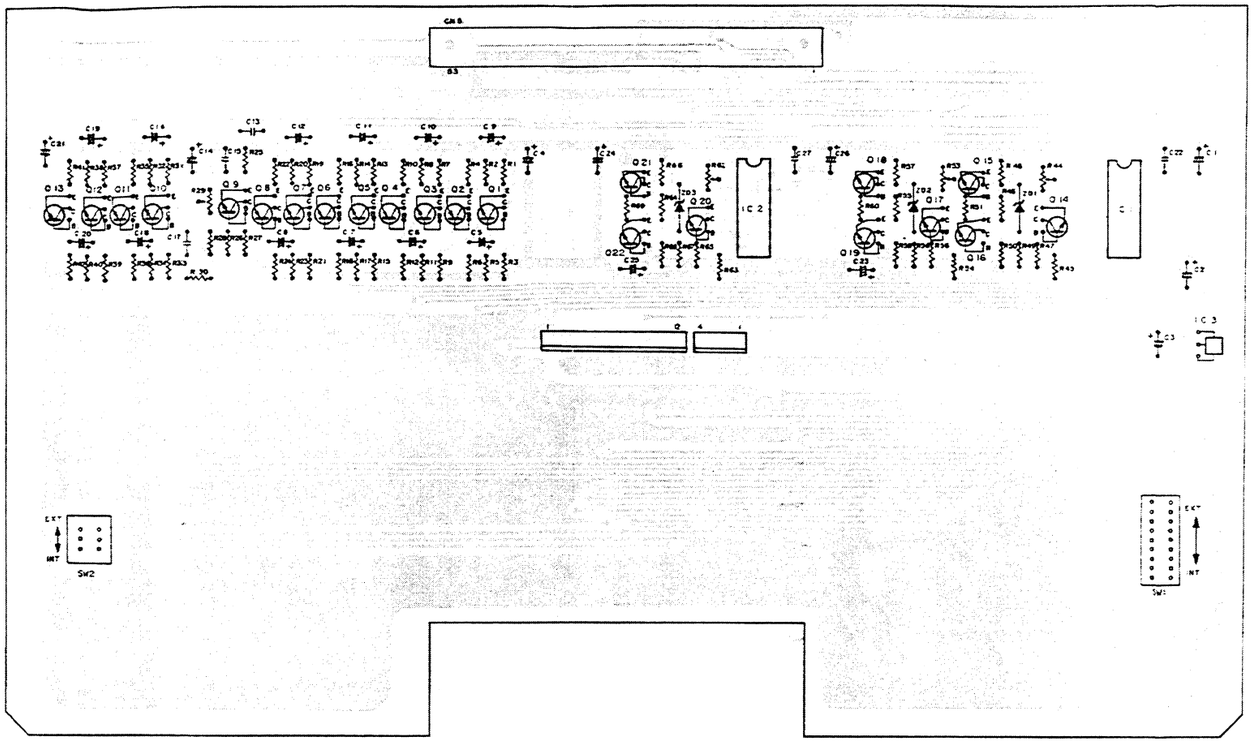


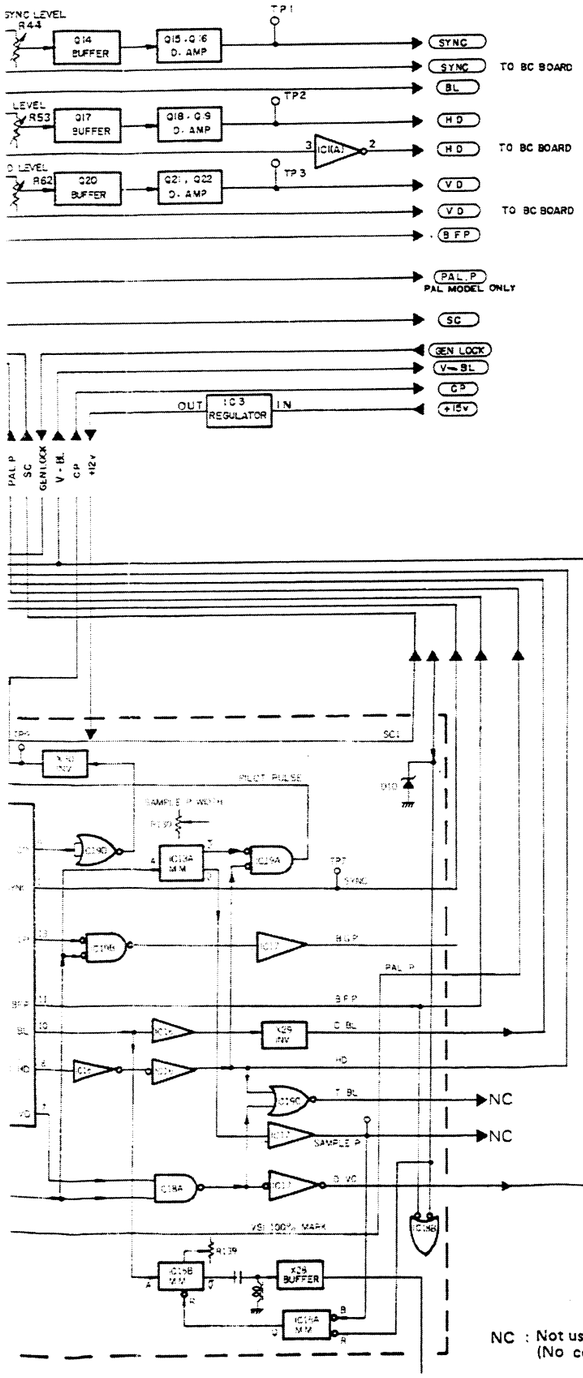
7.2.16 (2) SG CIRCUIT BOARD

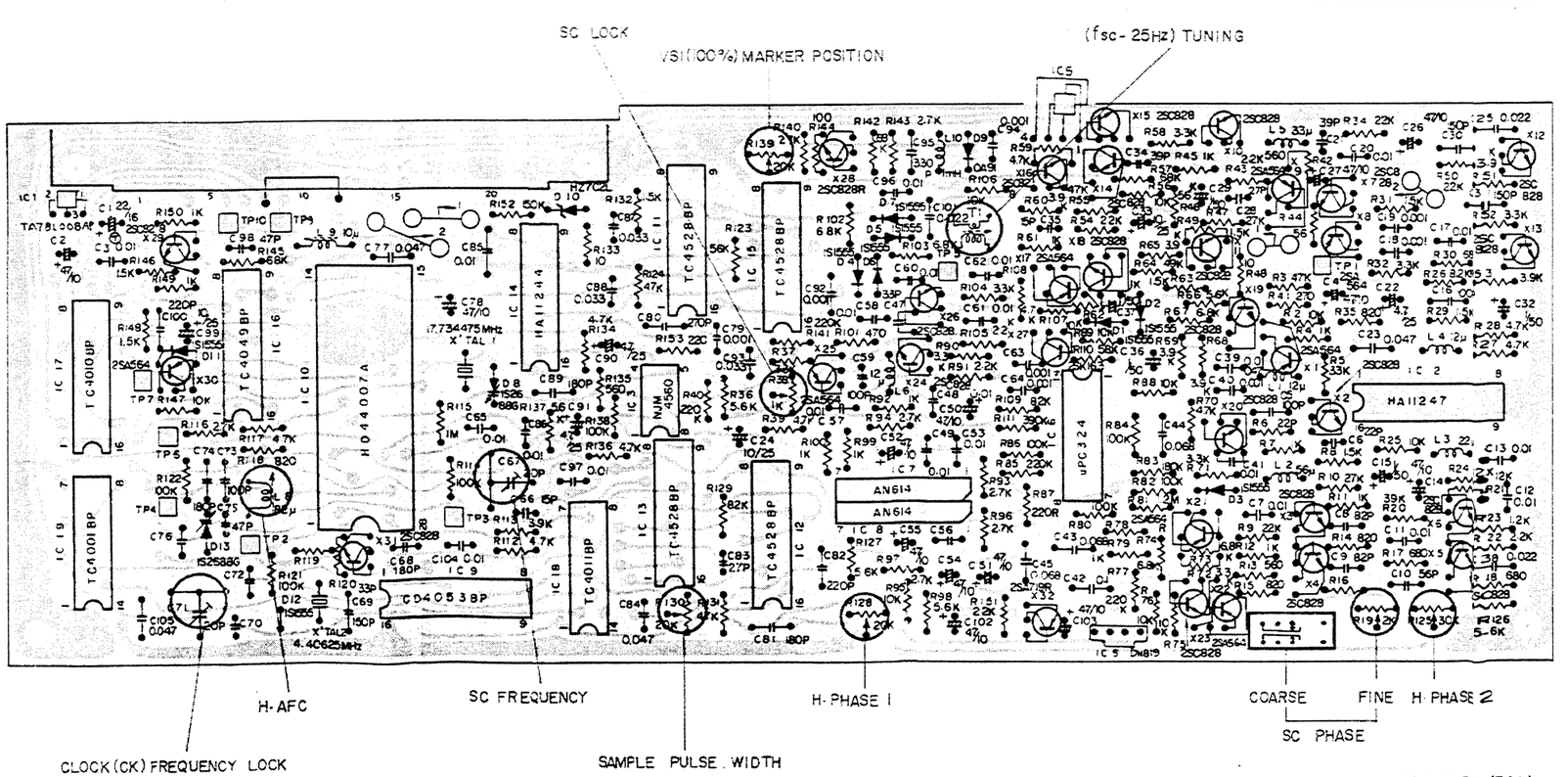
– SOLDERING SIDE – (PAL)

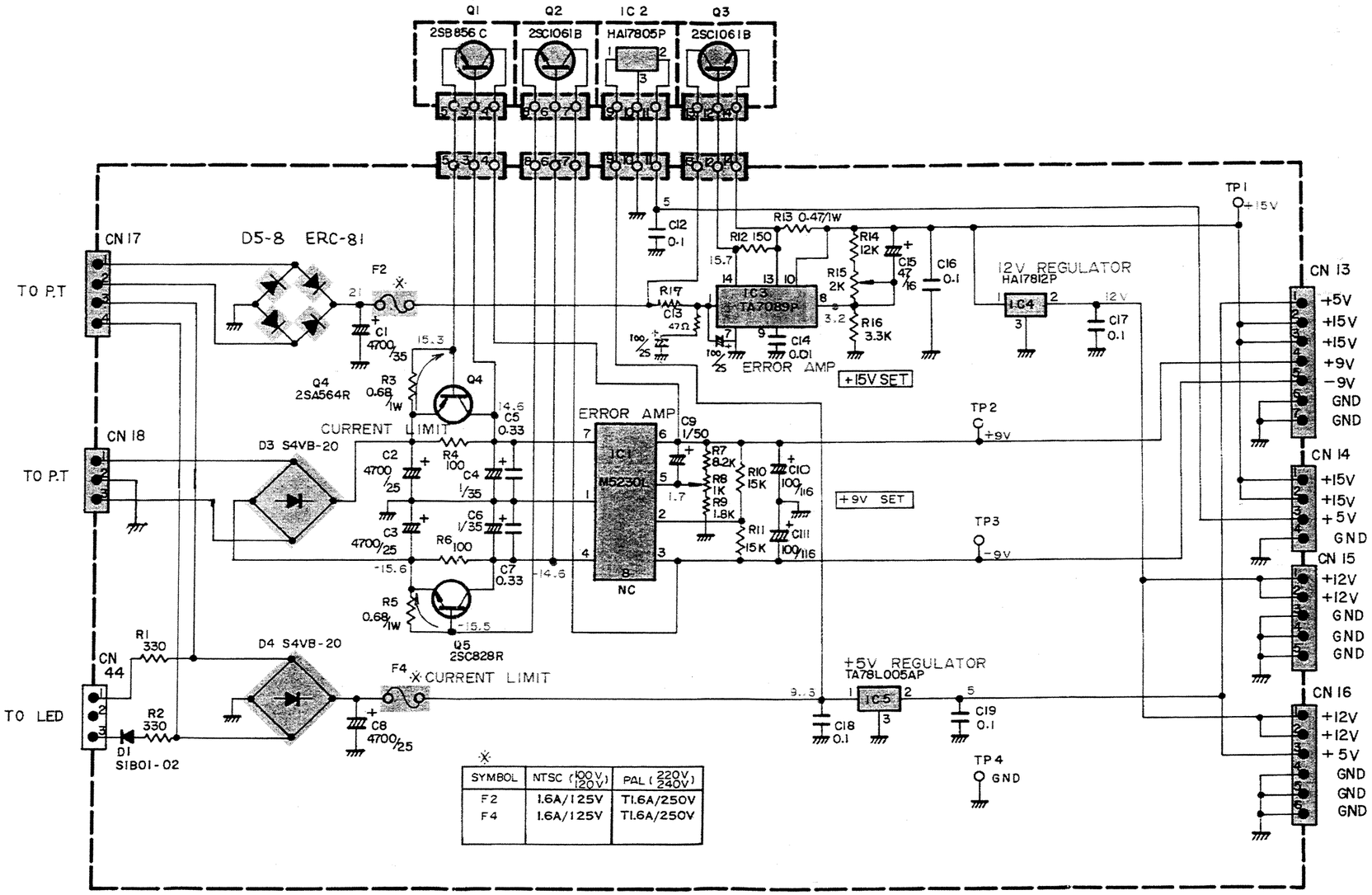
(SG BOARD BASE)

PARTS No.	PAL	NTSC
Q12	2SC828(R)	–
Q13	2SA564(R)	–
R37	QRD167J-473	–
R38	" -750	–
R39	" -473	–
R40	" -152	–
R41	" -473	–
R42	" -152	–
C19	QET61EM-106	–
C20	" -106	–
C22	–	QFM31HK-104







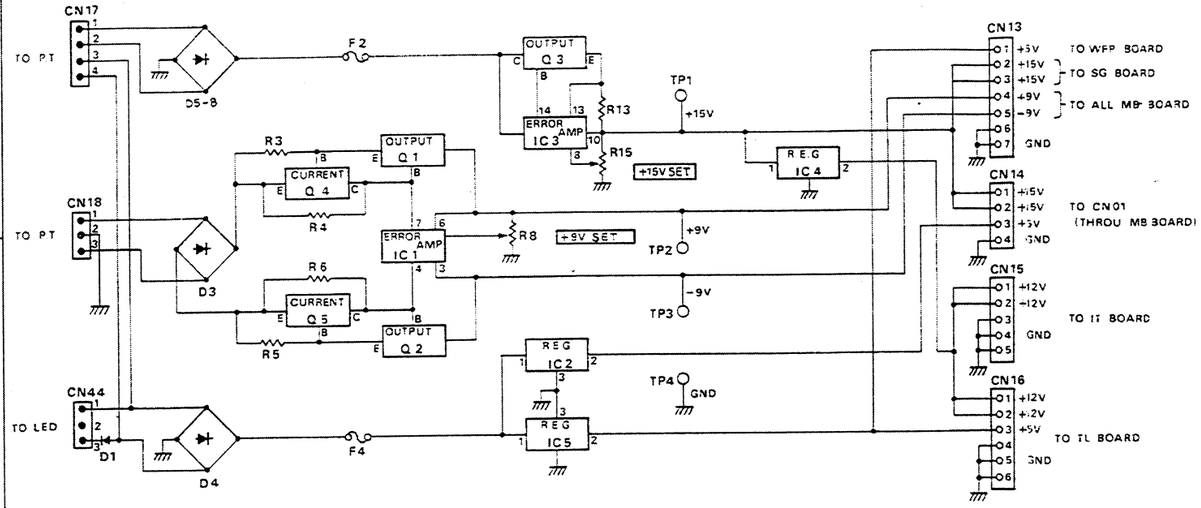


※

SYMBOL	NTSC (100V 120V)	PAL (220V 240V)
F2	1.6A/125V	T1.6A/250V
F4	1.6A/125V	T1.6A/250V

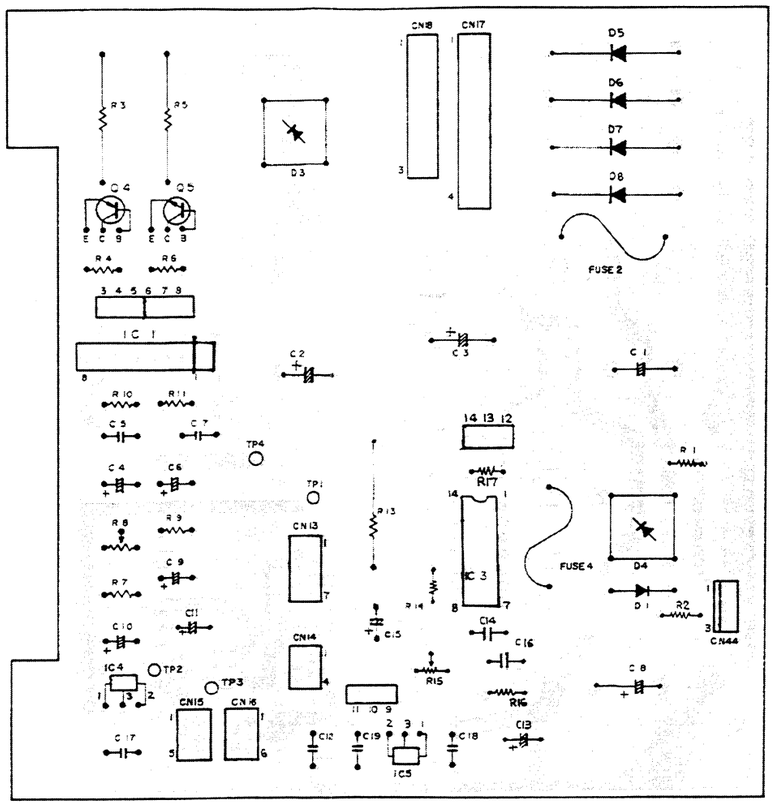
7-16 PS SCHEMATIC (SG BOARD)(PAL)

7.2.18 PS BOARD BLOCK DIAGRAM

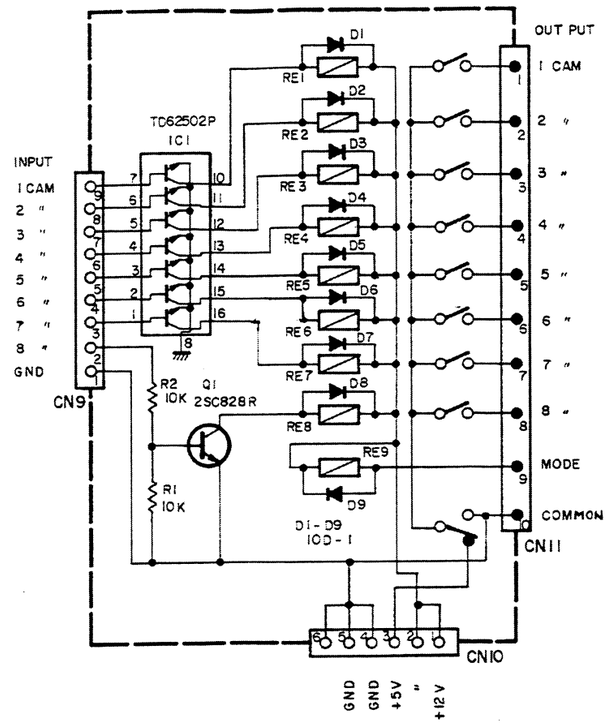


*CURRENT : CURRENT LIMIT
REG : REGULATOR

7.2.19 PS CIRCUIT BOARD
– SOLDERING SIDE –

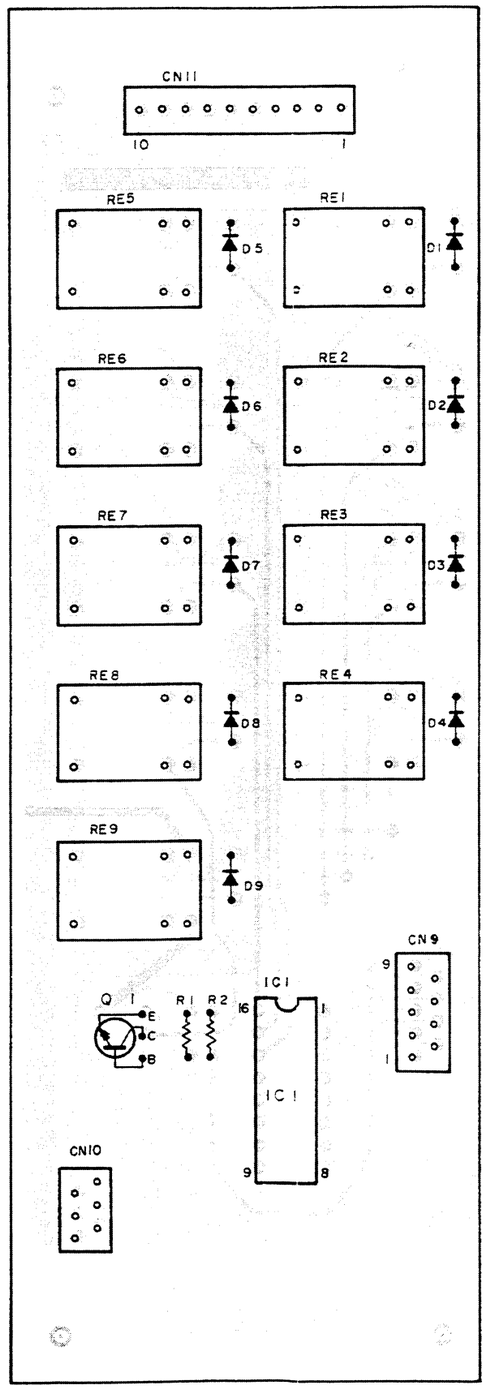


7.2.20 TALLY BOARD SCHEMATIC DIAGRAM (TL BOARD)



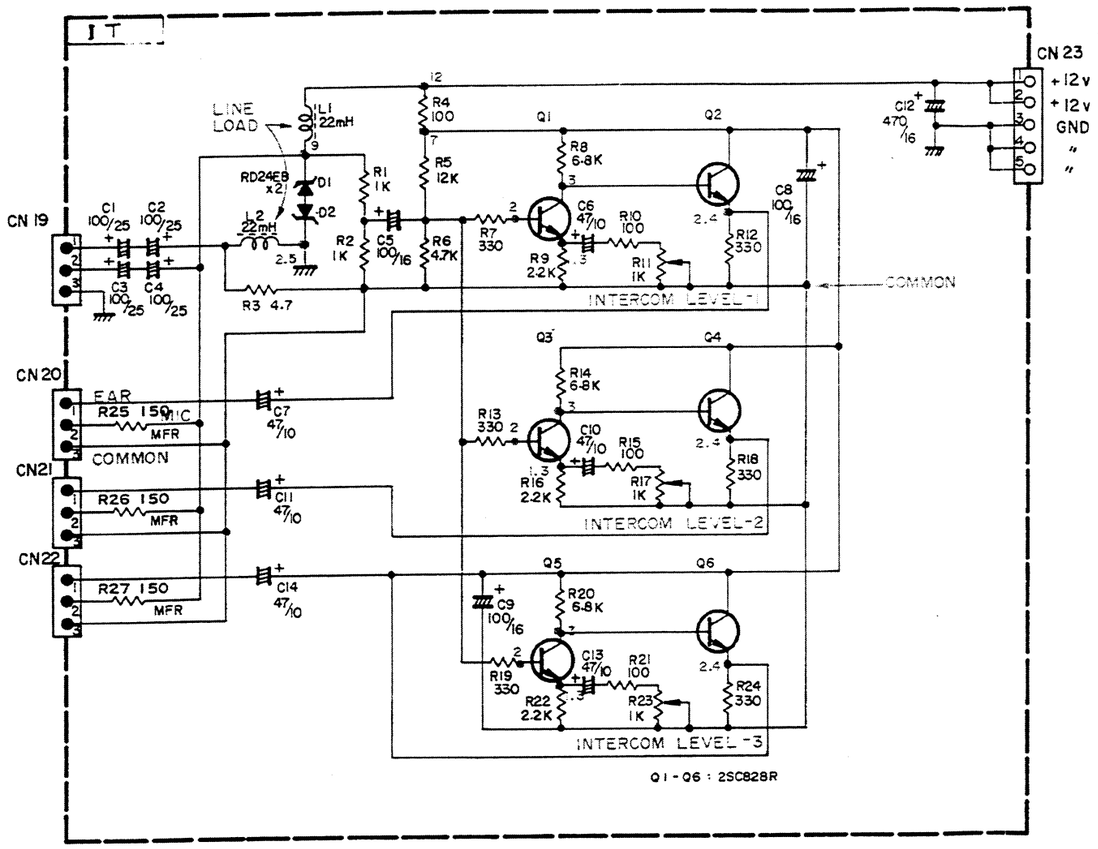
7.2.21 TL CIRCUIT BOARD

– SOLDERING SIDE –



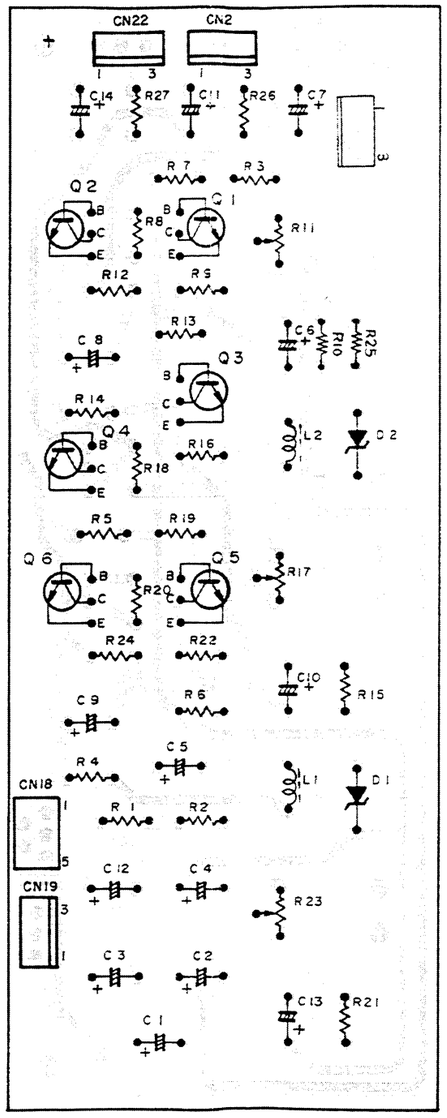
7-18 TL SCHEMATIC & BOARD (PS BOARD)

7.2.22 INTERCOM BOARD SCHEMATIC DIAGRAM (IT BOARD)



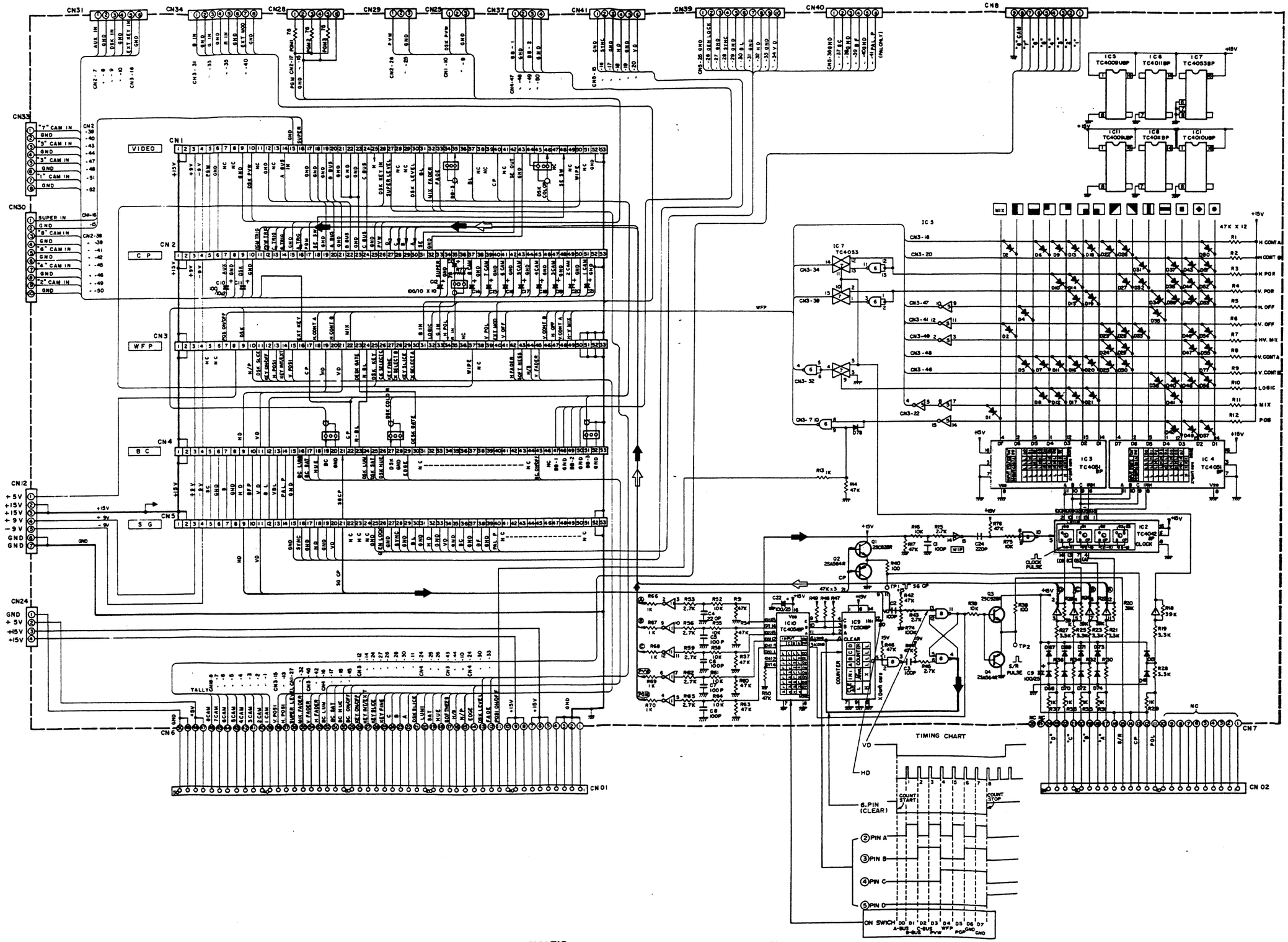
7.2.23 IT CIRCUIT BOARD

– SOLDERING SIDE –



7-19 IT SCHEMATIC & BOARD (MB SCHEMATIC)

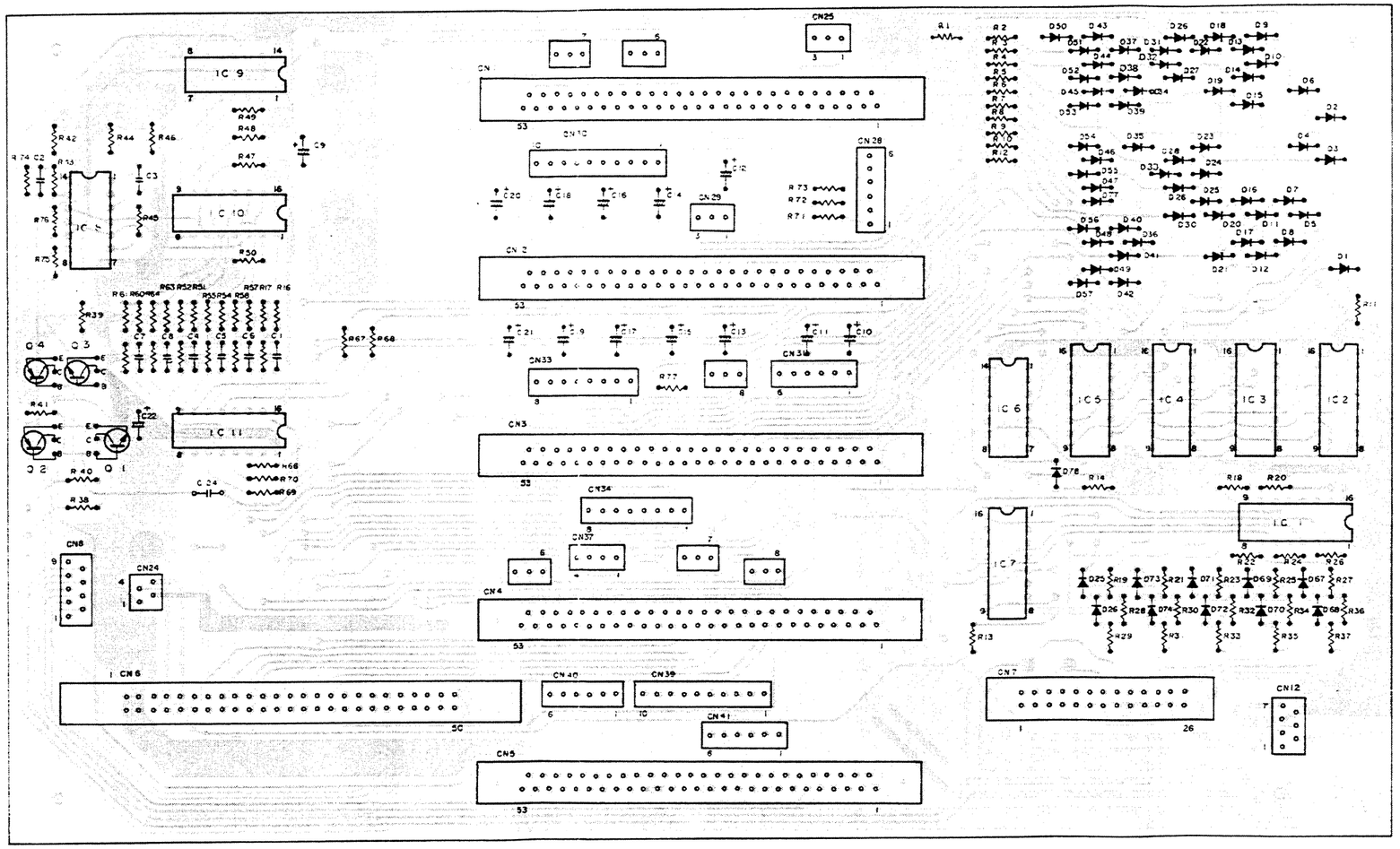
7.2.24 MOTHER BOARD SCHEMATIC DIAGRAM (MB BOARD)



7-20 MB SCHEMATIC
(IT SCHEMATIC & BOARD)

7.2.25 MB CIRCUIT BOARD

– SOLDERING SIDE –



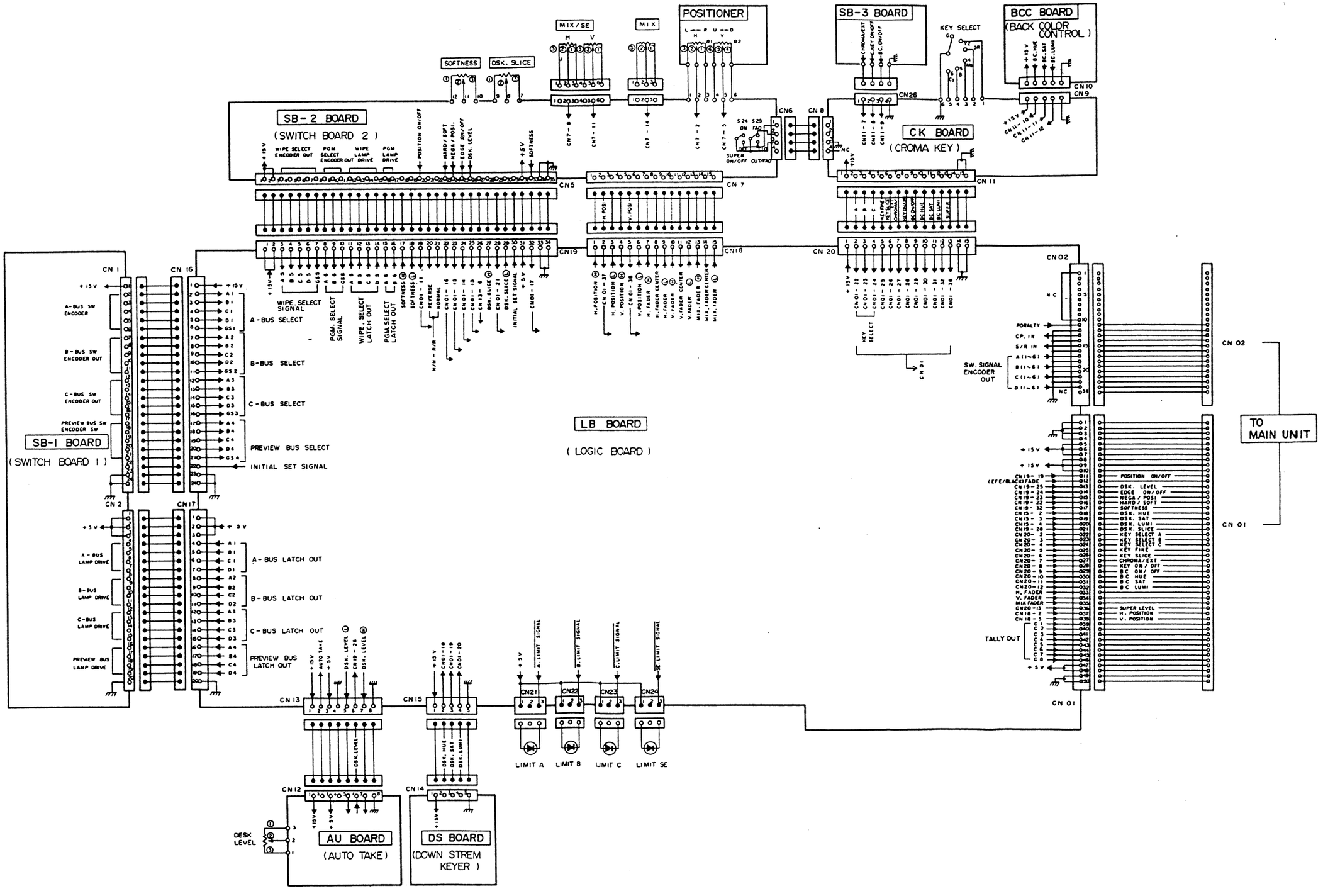
99

7-22 (MB BOARD)

99'

7.3 CONTROL UNIT

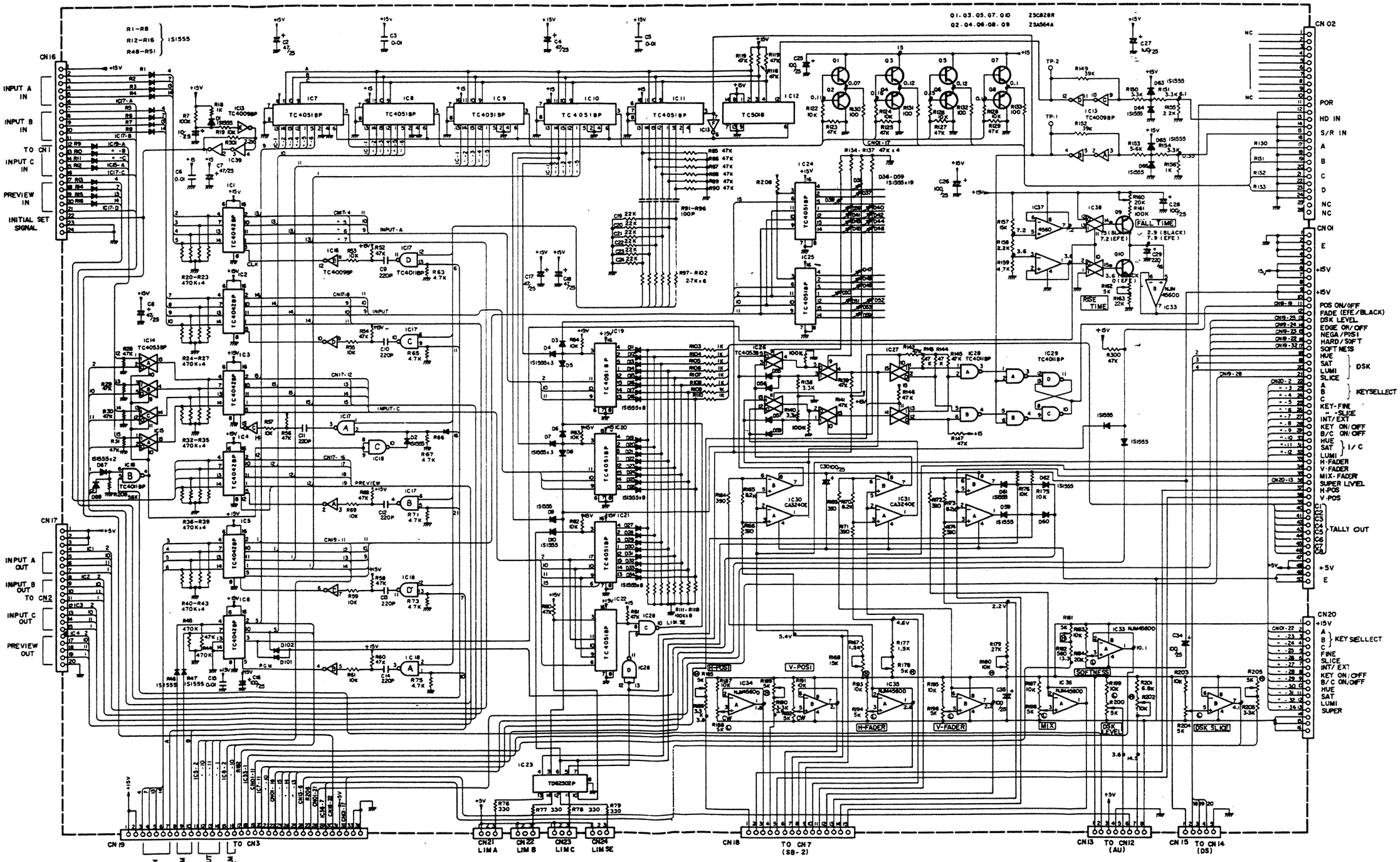
7.3.1 CONTROL UNIT OVERALL WIRING



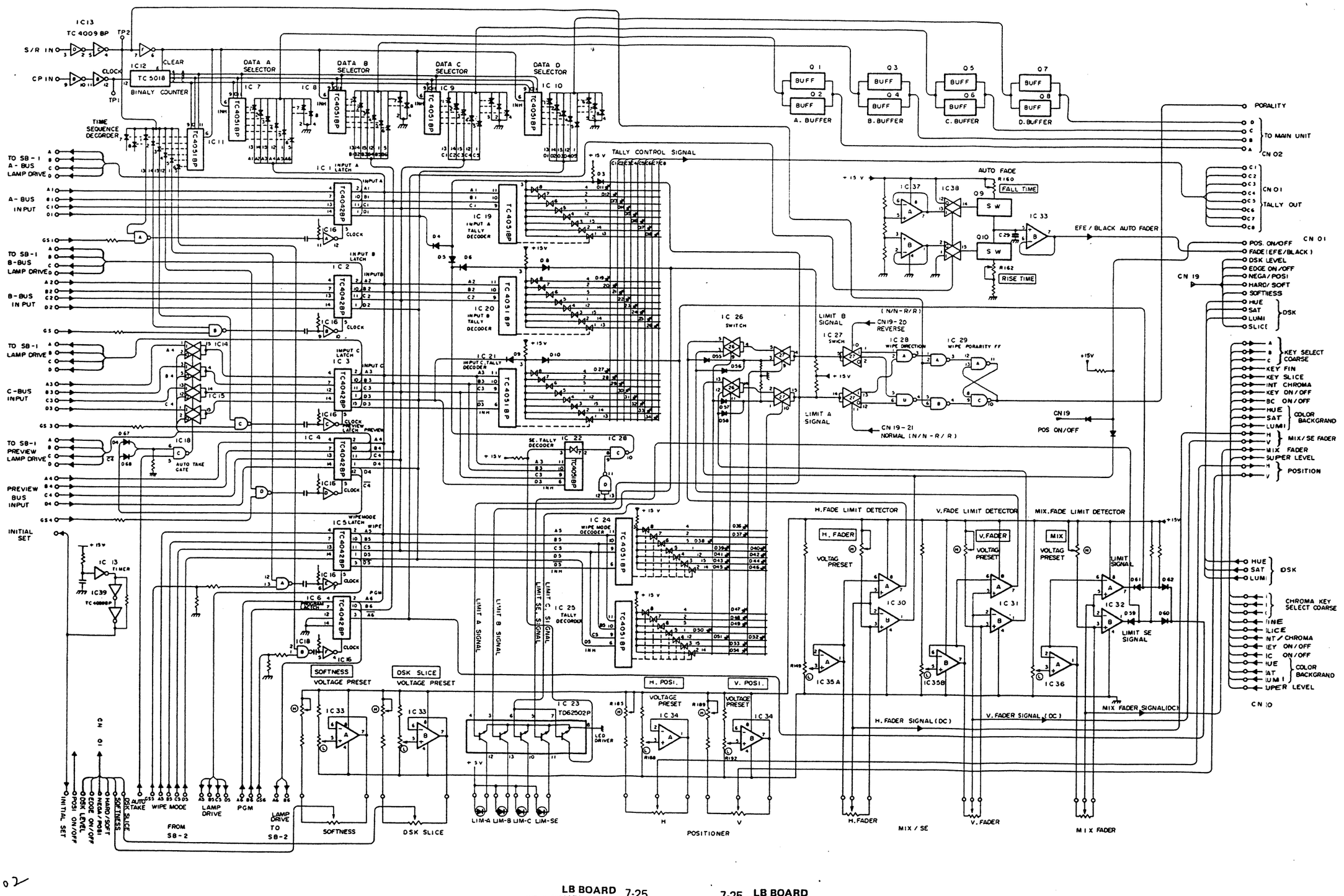
7-23 OVERALL WIRING (CONTROL) (LB SCHEMATIC)

100

7.3.2 LOGIC CONTROL BOARD SCHEMATIC DIAGRAM (LB BOARD)

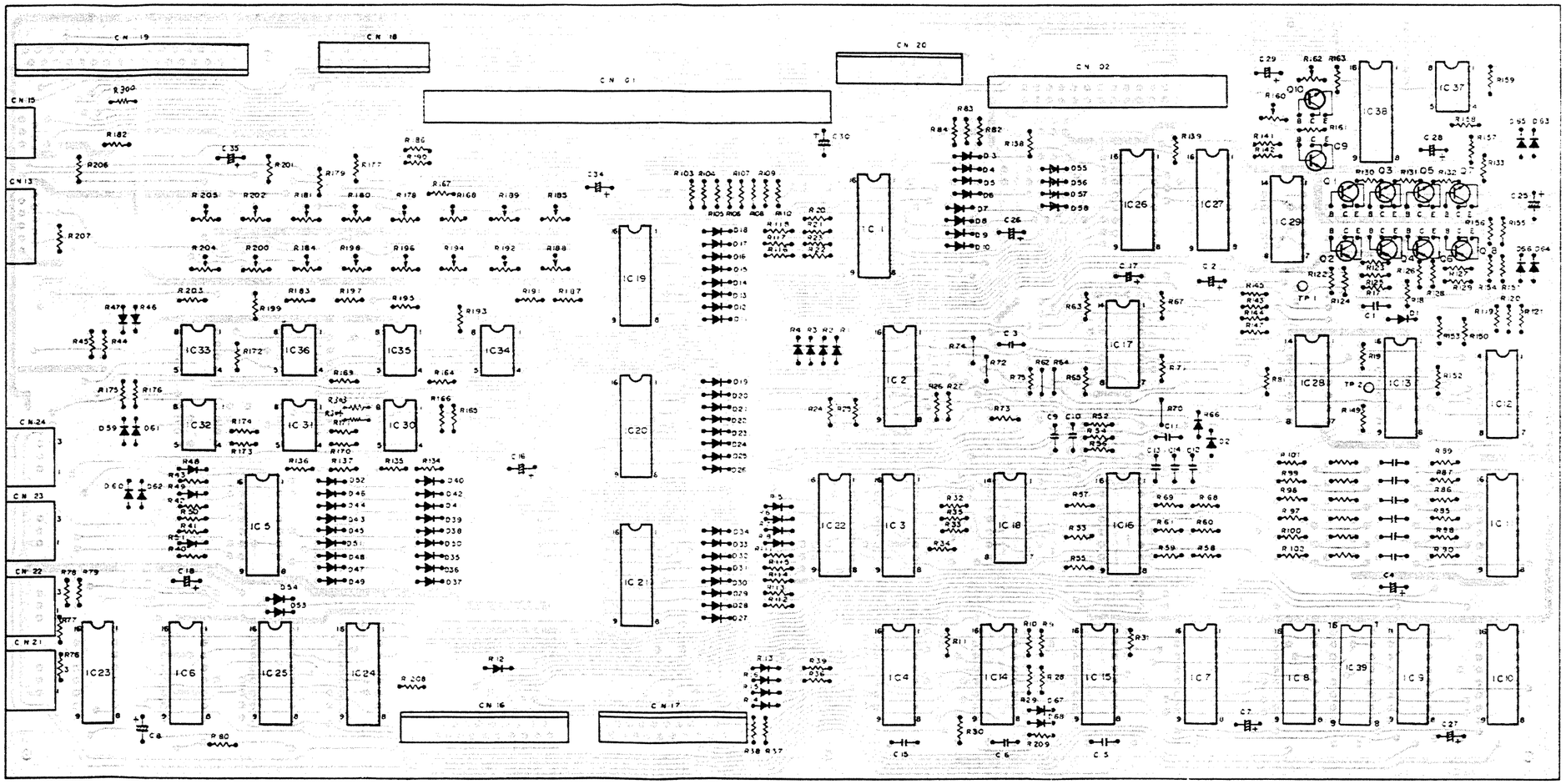


7.3.3 LB BOARD BLOCK DIAGRAM



7.3.4 LB CIRCUIT BOARD

– SOLDERING SIDE –



N UNIT

OUT

F CN 01
BLACK)
FF
T

SK

EY SELECT
OARSE
IN
LICE
HROMA
N/OFF
N/OFF
COLOR
BACKGRAND

MIX/SE FADER
FADER
R LEVEL

POSITION

SK

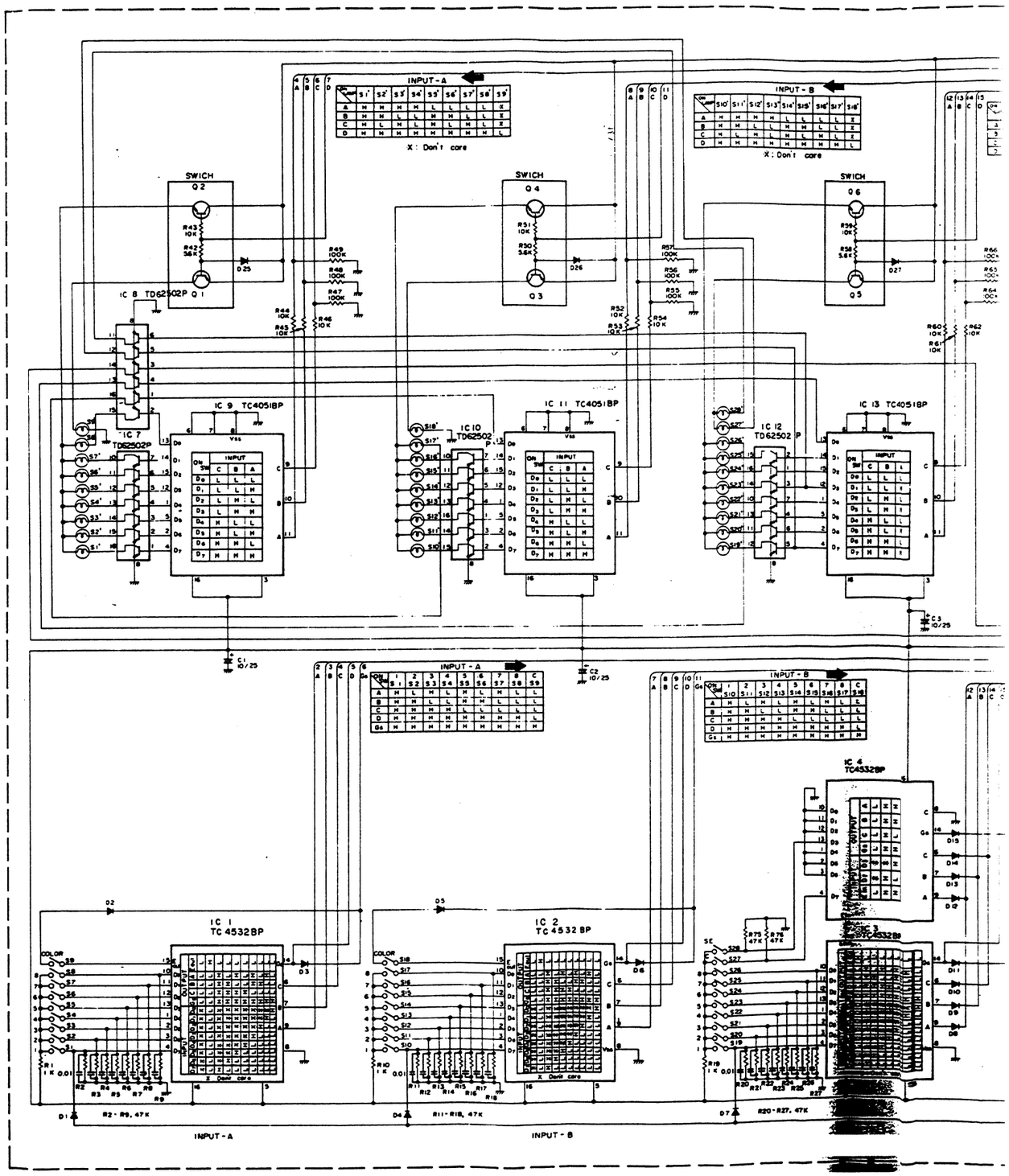
HROMA KEY
ELECT COARSE

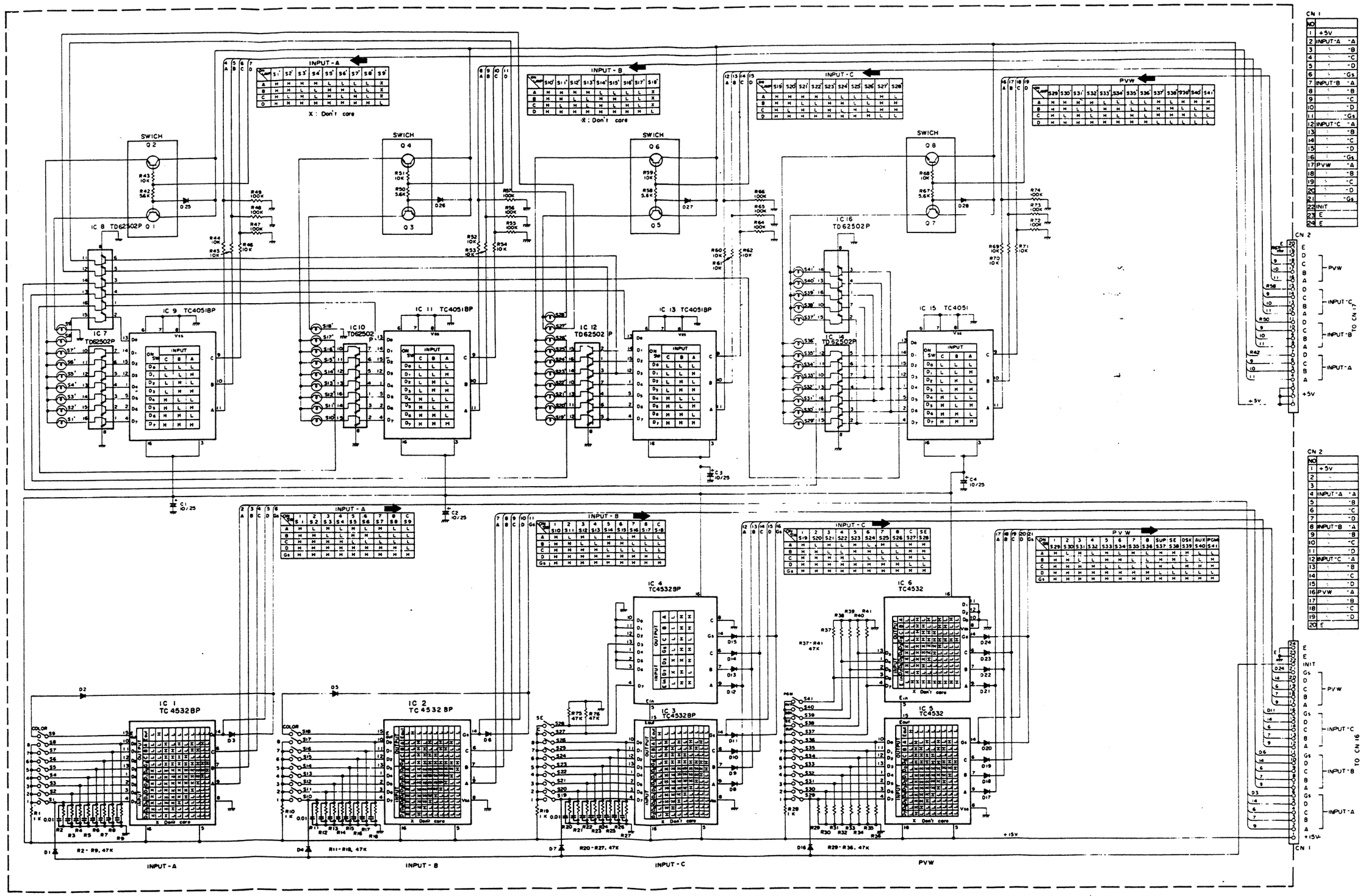
HROMA
N/OFF
N/OFF
COLOR
BACKGRAND

LEVEL

7-25 LB BOARD (SB-1 SCHEMATIC)

7.3.5 SWITCH BOARD-1 SCHEMATIC DIAGRAM (SB-1 BOARD)



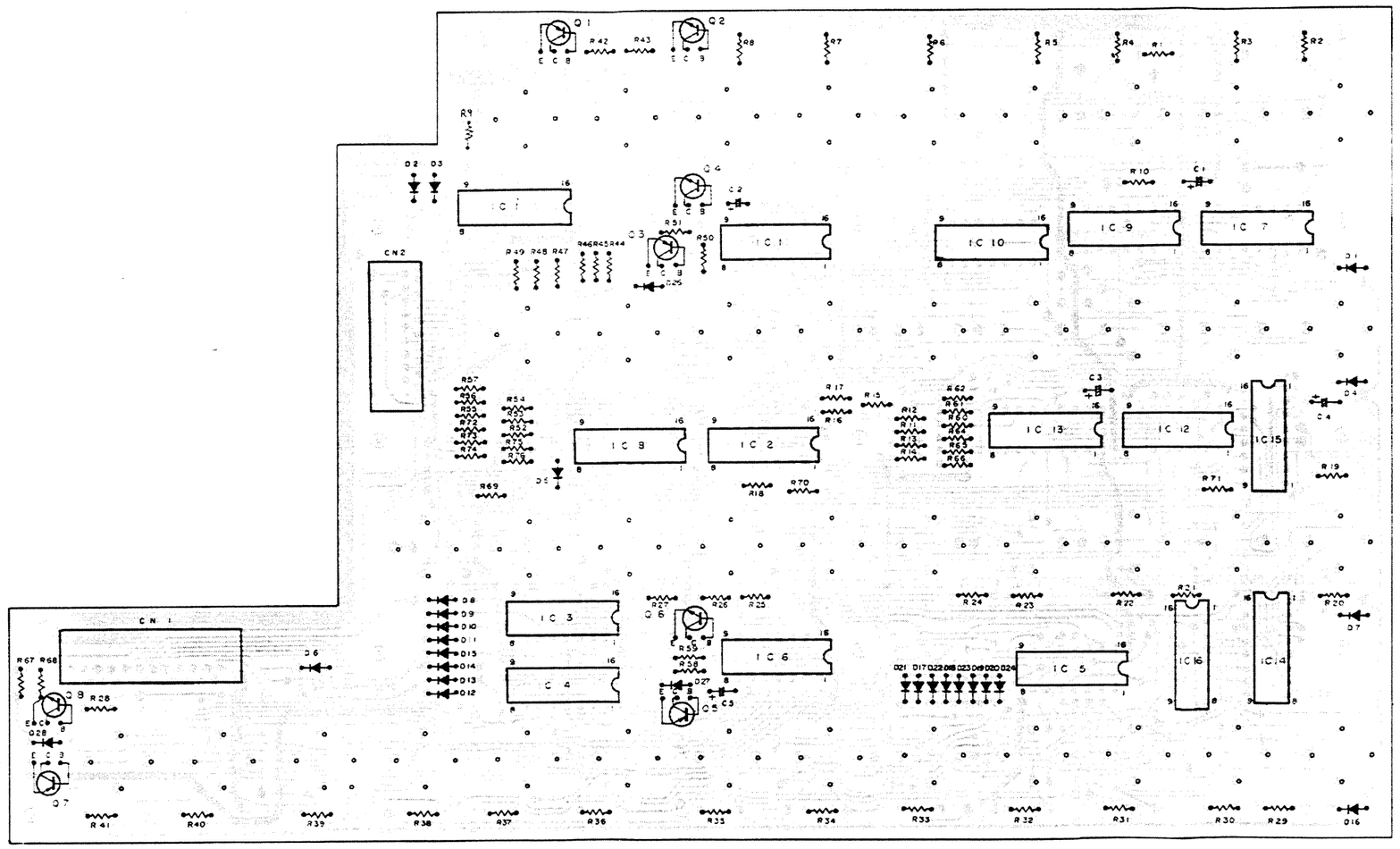

INPUT - A
X : Don't care
INPUT - B
* : Don't care
INPUT - C
PVW
SWICH Q 2
SWICH Q 4
SWICH Q 6
SWICH Q 8
Q 3
Q 5
Q 7
IC 8 TD62502P Q 1
IC 7 TD62502P
IC 9 TC4051BP
IC10 TD62502P
IC 11 TC4051BP
IC 12 TD62502 P
IC 13 TC4051BP
IC 16 TD62502P
IC 15 TC4051
IC 1 TC 4532 BP
IC 2 TC 4532 BP
IC 4 TC4532BP
IC 3 TC4532BP
IC 6 TC4532
IC 5 TC4532
CN 1
CN 2
TO CN 17
TO CN 16
+5V
+15V
INPUT - A
INPUT - B
INPUT - C
PVW

A B C D E F G H

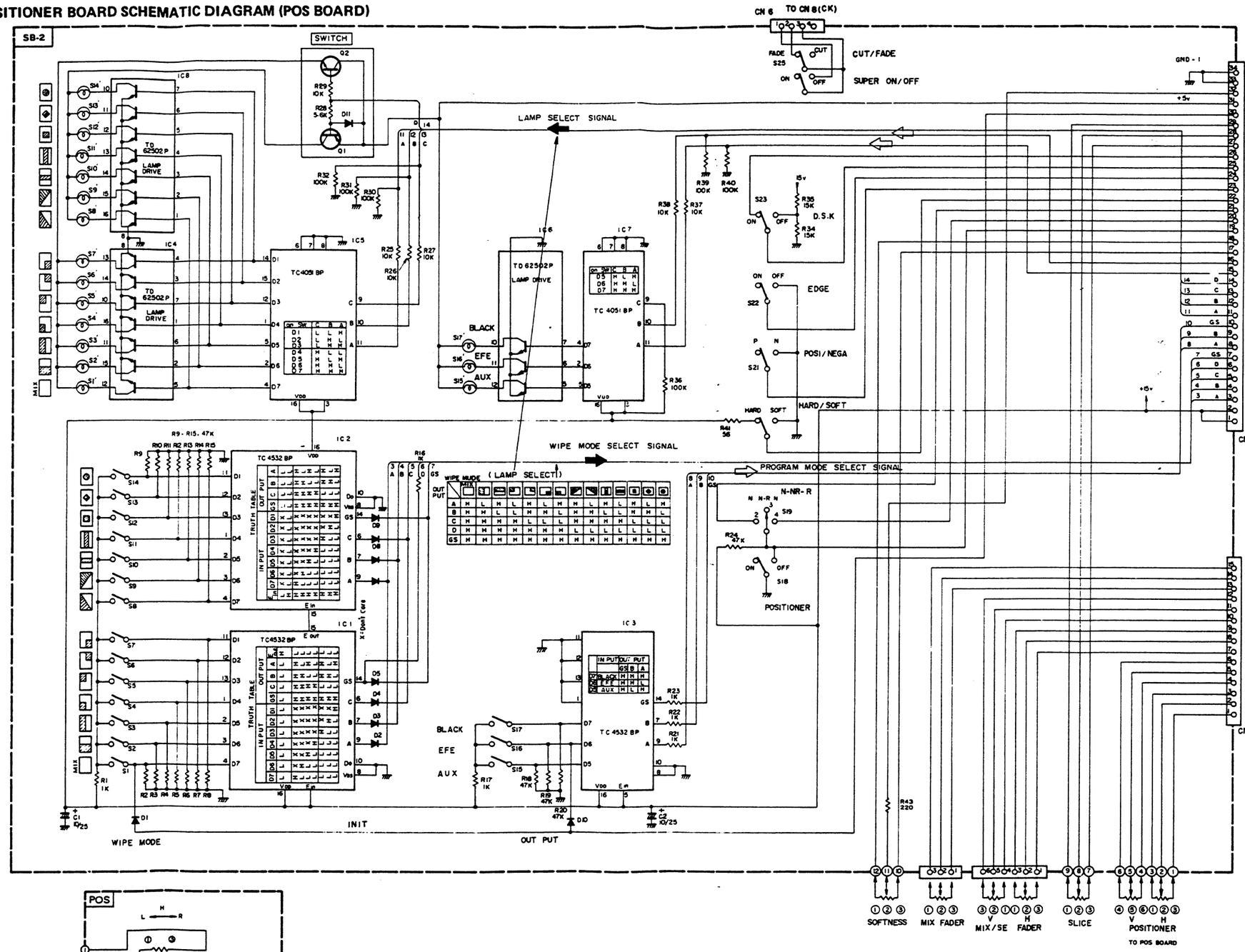
1 2 3 4 5 6

7.3.6 SB-1 CIRCUIT BOARD

– SOLDERING SIDE –



7.3.7 SWITCH BOARD-2 SCHEMATIC DIAGRAM (SB-2 BOARD)
7.3.8 POSITIONER BOARD SCHEMATIC DIAGRAM (POS BOARD)



CN 3

NO		
1	+ 15v	
2	+ 15v	
3	WIPE MOPE	A
4	"	B
5	"	C
6	"	D
7	"	GS
8	OUT PUT	A
9	"	B
10	"	GS
11	WIPE MOPE	A
12	"	B
13	"	C
14	"	D
15	OUT PUT LAMP	A
16	"	B
17	SOFTNESS	(H)
18	"	(L)
19	POSI ON / OFF	
20	REVERSE	
21	NORMAL	
22	HARD / SOFT	
23	POSI / NEGA	
24	EDGE	
25	DSK OUT LEVEL	
26	KEY LEVEL	
27	DSK SLICE (H)	
28	" SLICE	
29	" SLICE (L)	
30	INIT PULSE	
31	+ 5v	
32	SOFTNESS	
33	GND - 1	
34	GND - 1	

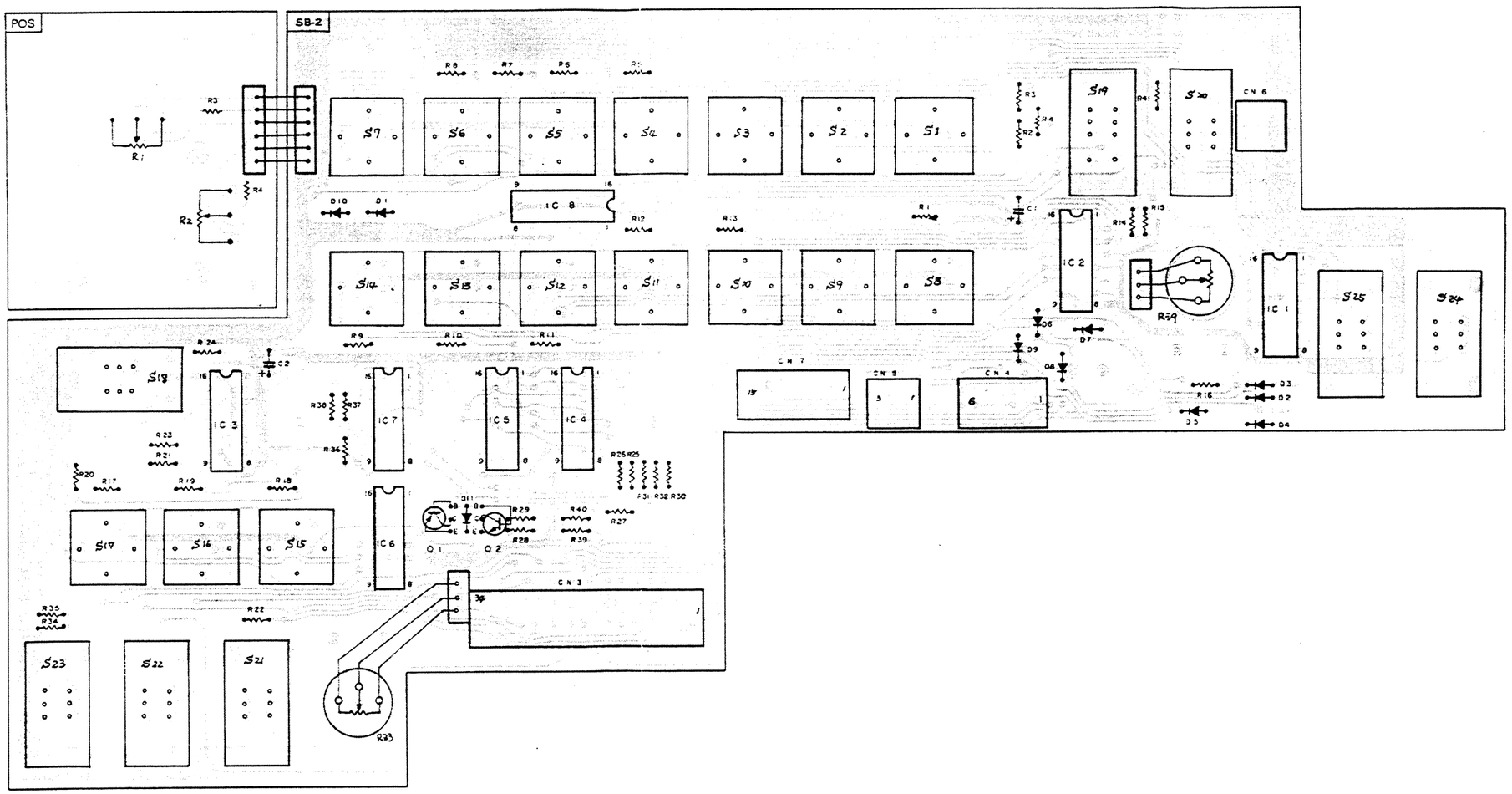
CN 7

NO		
1	H POS	③
2	"	②
3	"	①
4	V POS	⑥
5	"	⑤
6	"	④
7	H FADER	
8	"	
9	"	
10	V FADER	
11	"	
12	"	
13	MIX FADER	
14	"	
15	"	

7-28 SB-2 SCHEMATIC (SB-2 BOARD)

7.3.9 SB-2 CIRCUIT BOARD
7.3.10 POS CIRCUIT BOARD

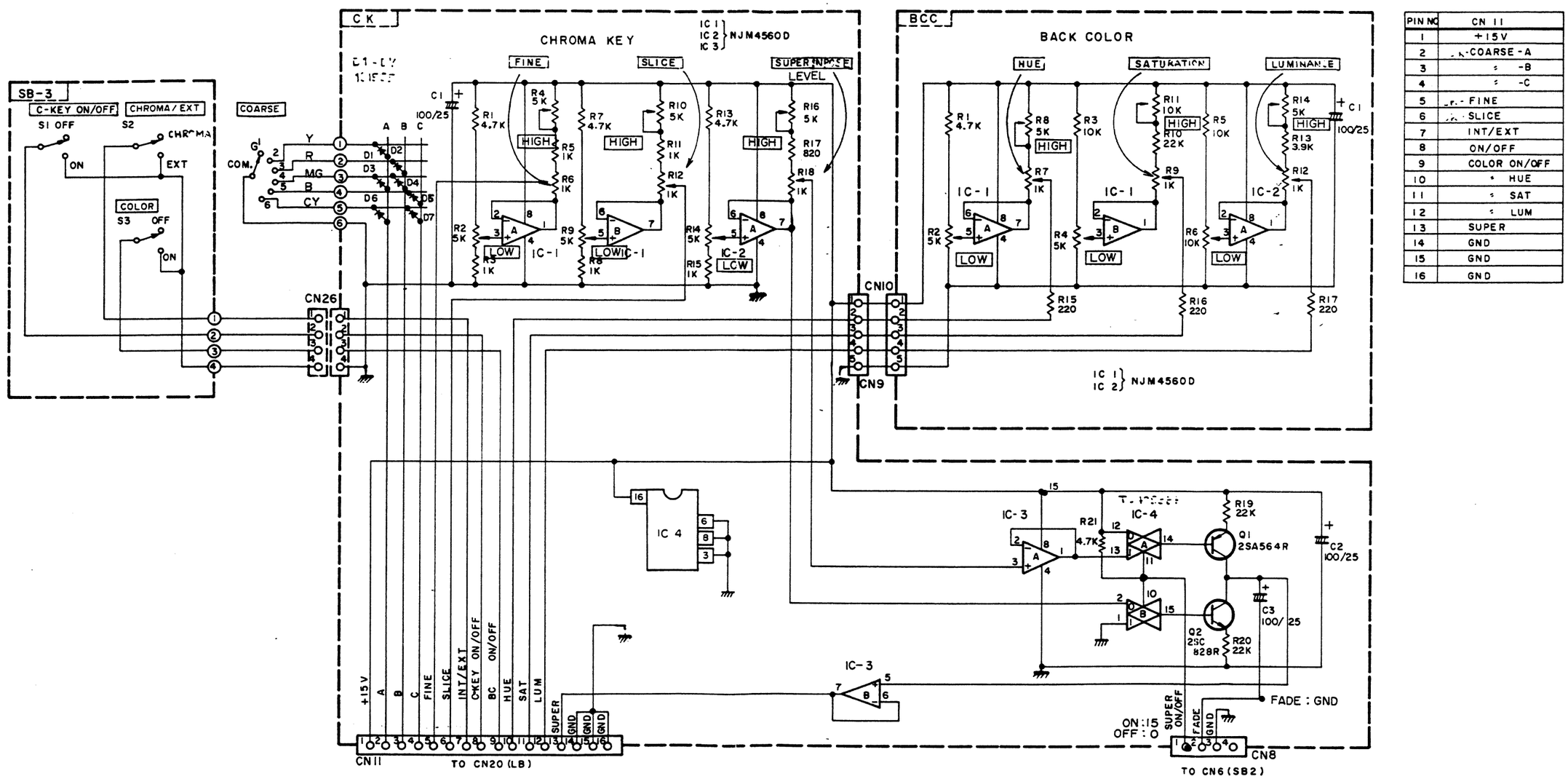
– SOLDERING SIDE –



7.3.11 SWITCH BOARD-3 SCHEMATIC DIAGRAM (SB-3 BOARD)

7.3.12 CHROMA KEY BOARD SCHEMATIC DIAGRAM (CK BOARD)

7.3.13 BACK COLOUR CONTROL BOARD SCHEMATIC DIAGRAM (BCC BOARD)



PIN NO	CN 11
1	+15V
2	R-COARSE-A
3	" -B
4	" -C
5	R- FINE
6	R- SLICE
7	INT/EXT
8	ON/OFF
9	COLOR ON/OFF
10	" HUE
11	" SAT
12	" LUM
13	SUPER
14	GND
15	GND
16	GND

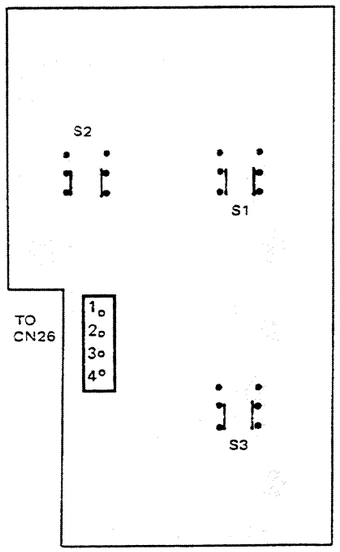
7-30 SB-3 & CK, BCC SCHEMATIC (SB-2 BOARD)

A B C D E F G H

1 2 3 4 5 6

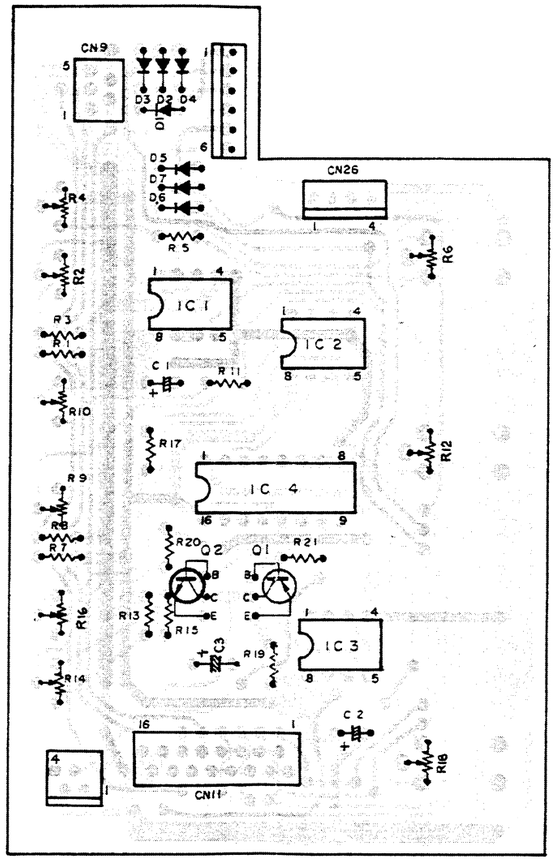
7.3.14 SB-3 CIRCUIT BOARD

– SOLDERING SIDE –



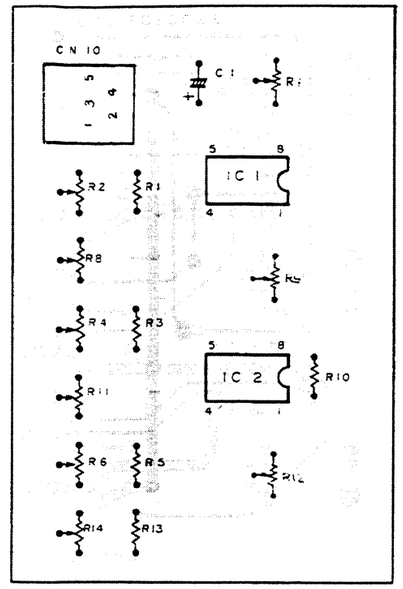
7.3.15 CK CIUCUIT BOARD

– SOLDERING SIDE –

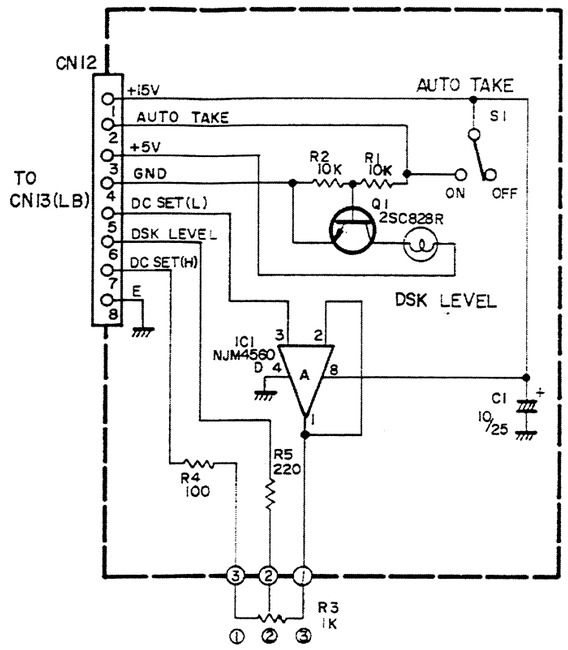


7.3.16 BCC CIRCUIT BOARD

– SOLDERING SIDE –

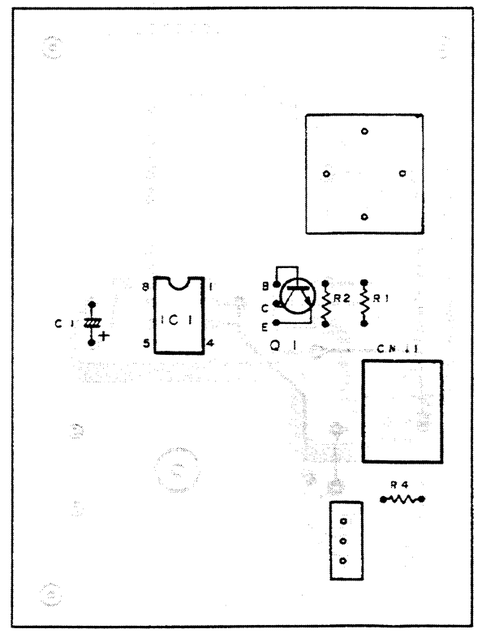


7.3.17 AUTO TAKE BOARD SCHEMATIC DIAGRAM (AU BOARD)

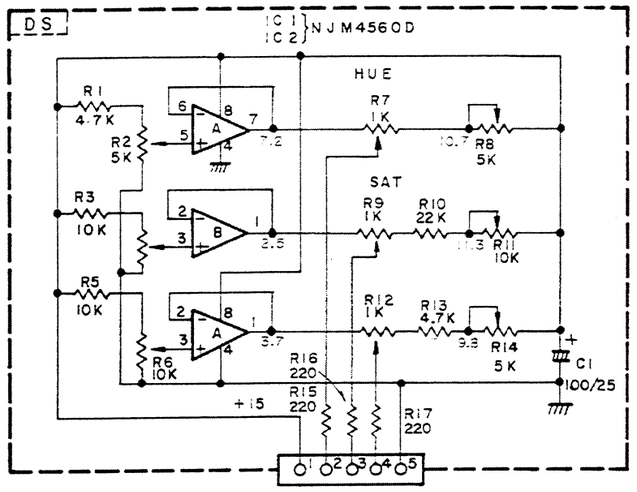


7.3.18 AU CIRCUIT BOARD

– SOLDERING SIDE –



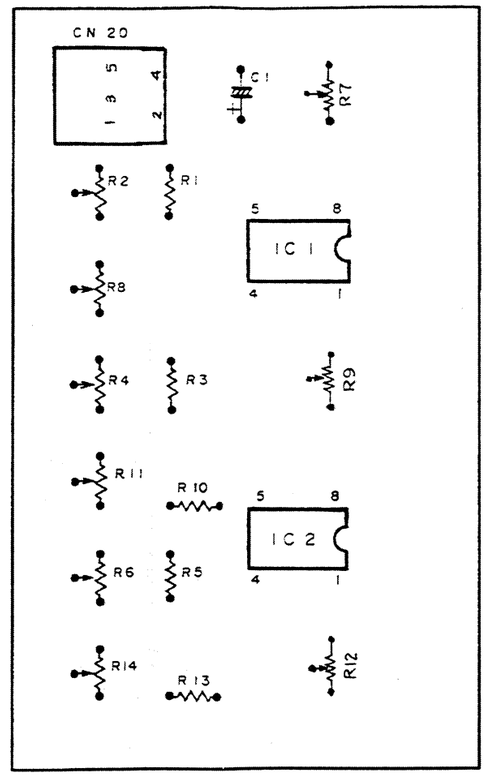
7.3.19 DOWNSTREAM KEYER BOARD SCHEMATIC DIAGRAM (DS BOARD)



PIN NO	CN10/14
1	+15V
2	HUE
3	SAT
4	LUM
5	E

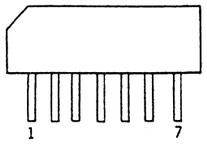
7.3.20 DS CIRCUIT BOARD

– SOLDERING SIDE –

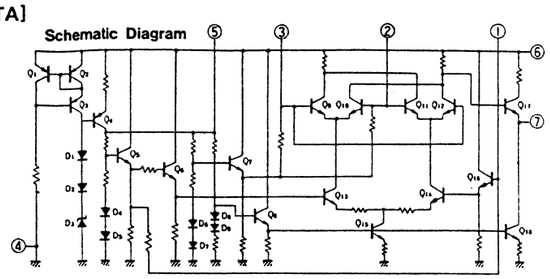


7.4 SCHEMATIC DIAGRAM OF ICs

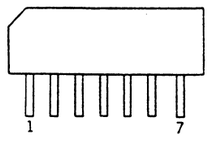
*AN612 (Balance Modulator) [MATSUSHITA]



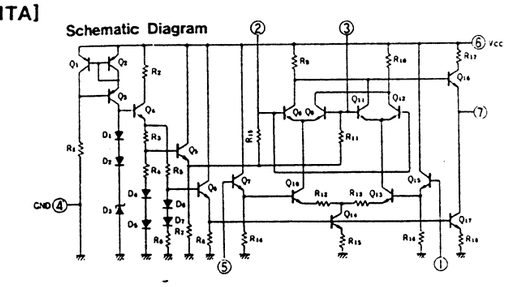
Schematic Diagram



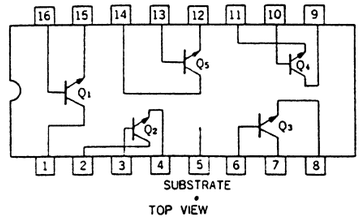
*AN614 (Balance Modulator) [MATSUSHITA]



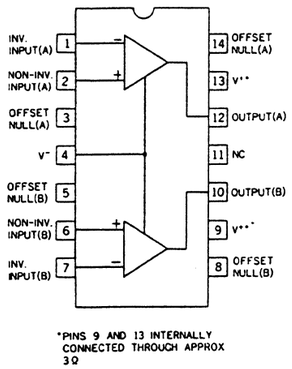
Schematic Diagram



*CA3083AE (N-P-N Transistor Array) [RCA]

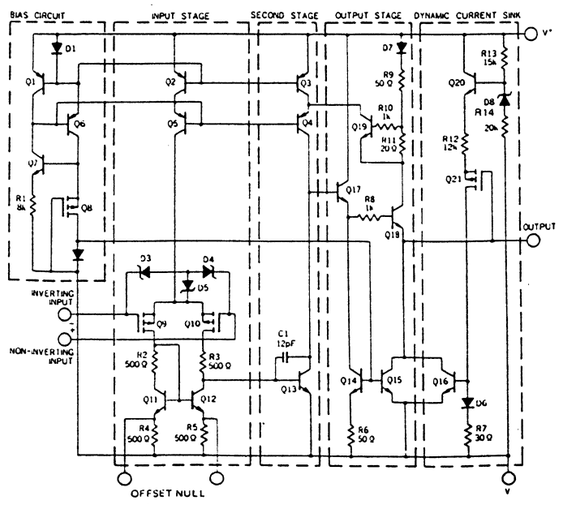


*CA3240E (Dual BiMOS Operational Amplifiers) [RCA]

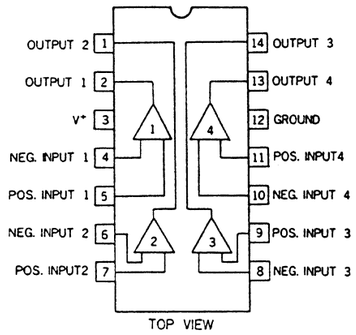


*PINS 9 AND 13 INTERNALLY CONNECTED THROUGH APPROX 3Ω

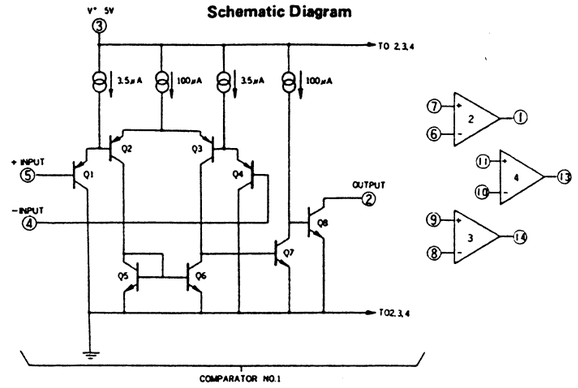
Schematic Diagram



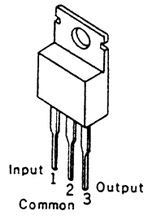
*CA339E (Quad Voltage Comparators) [RCA]



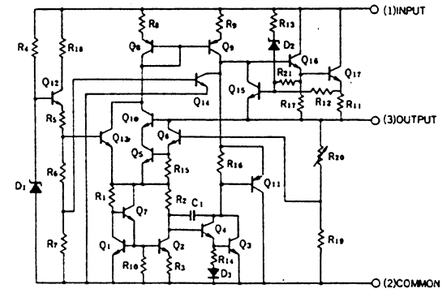
Schematic Diagram



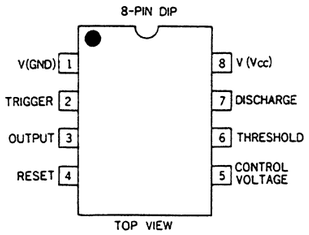
*HA17805P (3-Terminal Fixed Voltage Regulators) [HITACHI]
*HA17812P



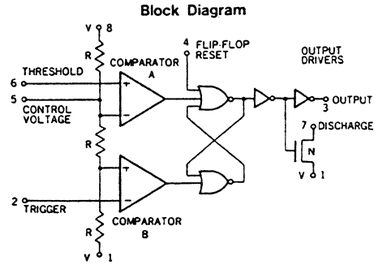
Schematic Diagram



*ICM7555IPA (Timer) [INTERSIL]



Block Diagram

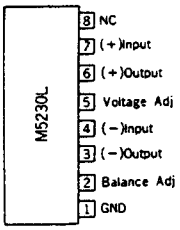


This block diagram reduces the circuitry down to its simplest equivalent components.

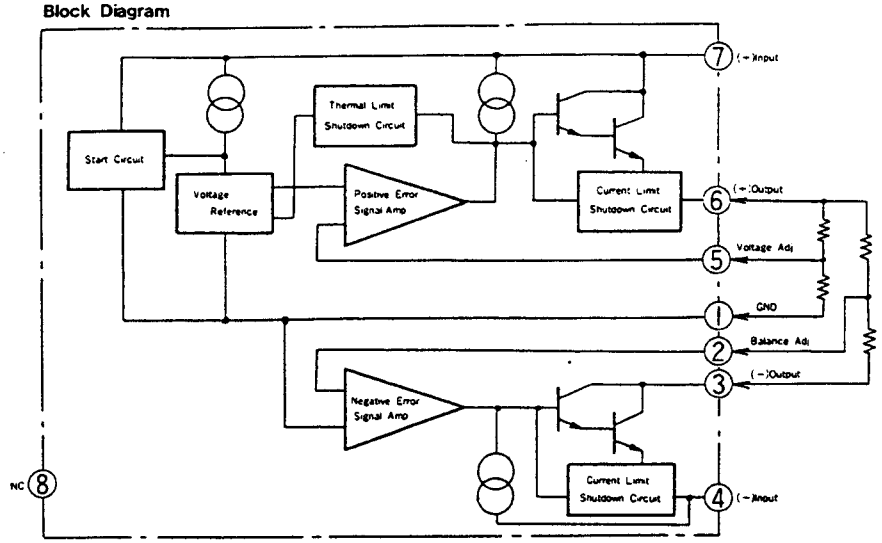
TRUTH TABLE

THRESHOLD VOLTAGE	TRIGGER VOLTAGE	RESET	OUTPUT	DISCHARGE SWITCH
DON'T CARE	DON'T CARE	LOW	LOW	ON
$> \frac{2}{3}(V^+ - V^-)$	$> \frac{2}{3}(V^+ - V^-)$	HIGH	LOW	ON
$\frac{1}{3} < V_{TH} < \frac{2}{3}$	$\frac{1}{3} < V_{TH} < \frac{2}{3}$	HIGH	?	?
$< \frac{1}{3}(V^+ - V^-)$	$< \frac{1}{3}(V^+ - V^-)$	HIGH	HIGH	OFF

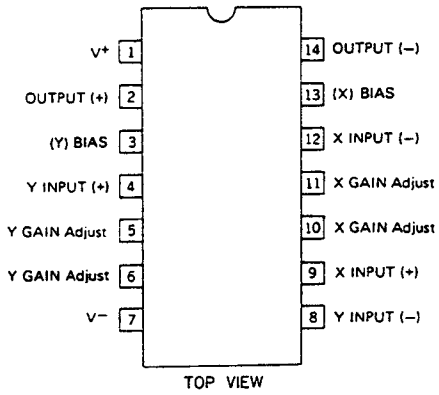
*M5230L (Precishion Dual Tracking Regulators) [MATSUSHITA]



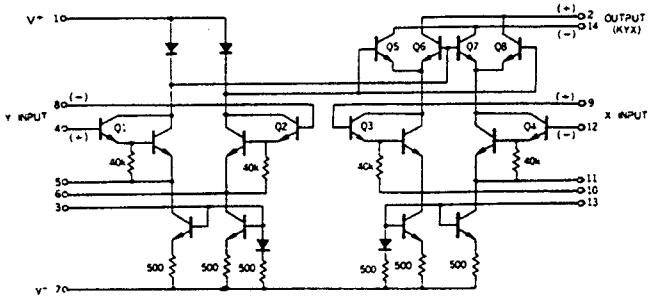
Block Diagram



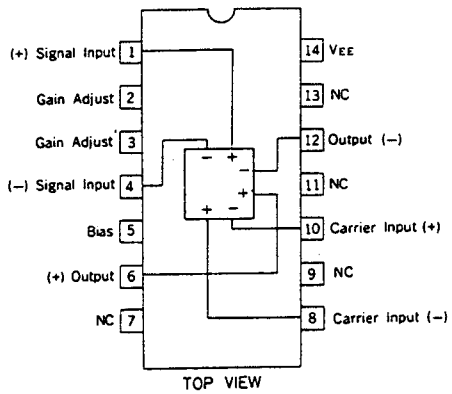
*MC1495L (Monolichic Deferential Amplifier) [MOTOROLA]



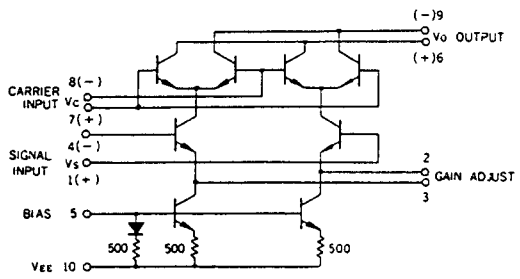
Schematic Diagram



*MC1496P (Balance Modulator-Demodulator) [MOTOROLA]

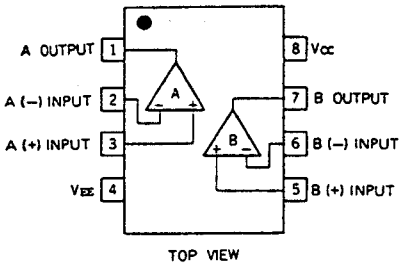


Schematic Diagram

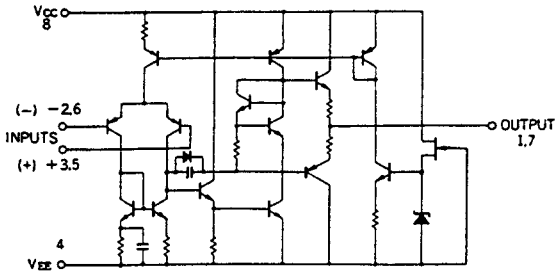


112

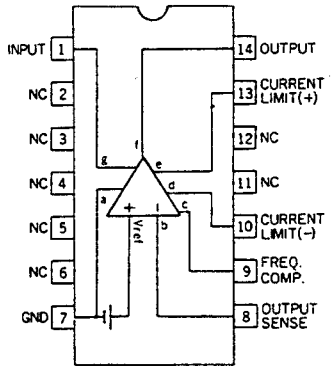
*NJM4560D (Dual Op. Amplifiers) [JRC]



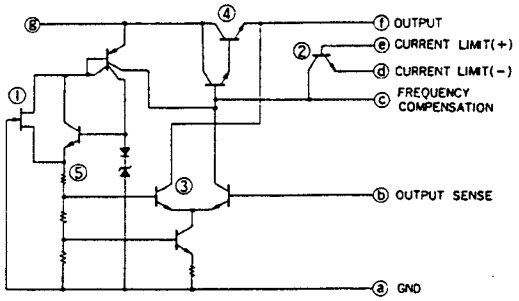
Schematic Diagram



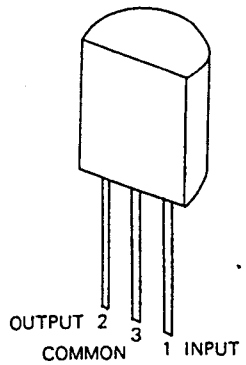
*TA7089P (Bipolar Monolithic Linear Amplifier) [TOSHIBA]



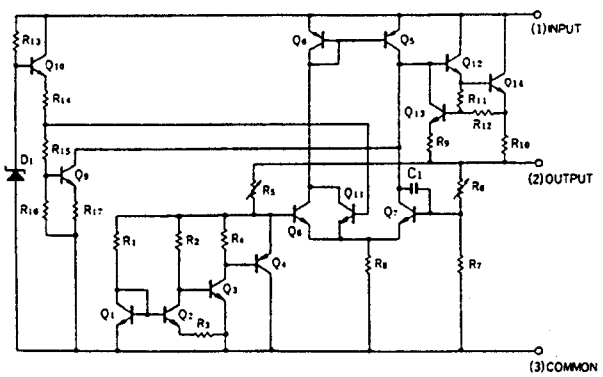
Schematic Diagram



*TA78L005AP (Voltage Regulator) [TOSHIBA]
TA781012AP

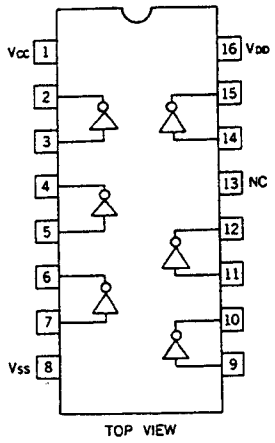


Schematic Diagram

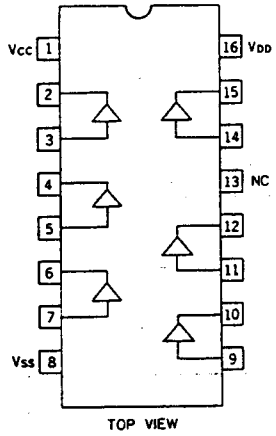


TA78L005AP→ 5 V
TA78L012AP→12V

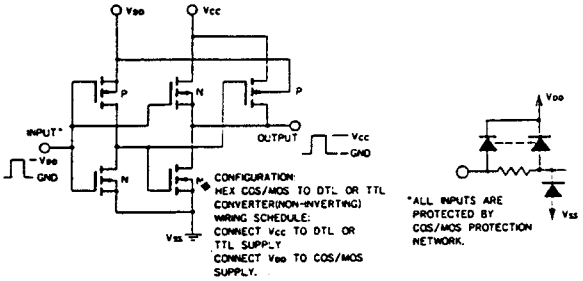
*TA4009BP (Hex Buffer/Converter) [TOSHIBA]



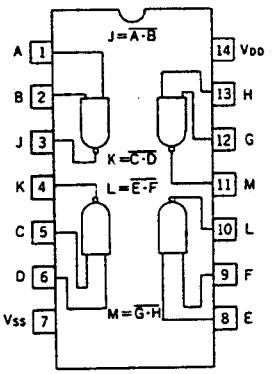
*TC4010BP (Hex Buffer/Converter) [TOSHIBA]



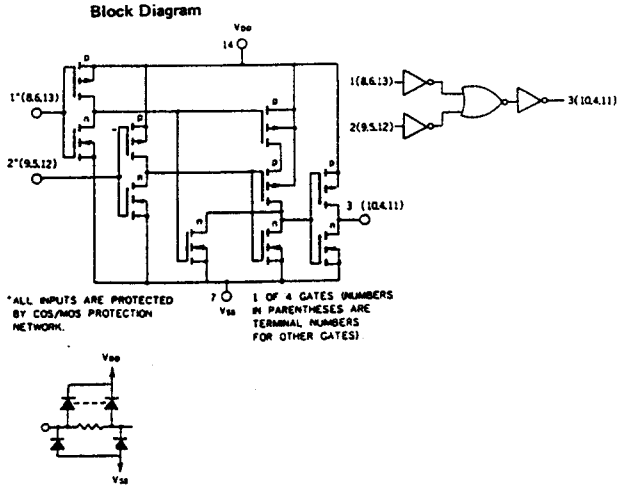
Schematic Diagram



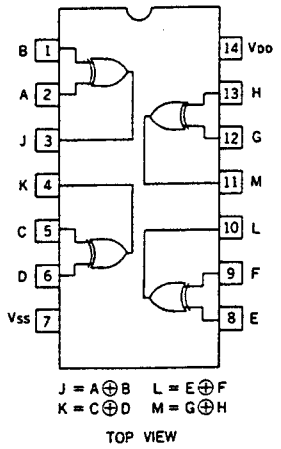
*TC4011BP (Quadruple 2-input NAND Gate) [TOSHIBA]



Block Diagram



*TC4030BP (Quadruple Exclusive-OR Gate) [TOSHIBA]

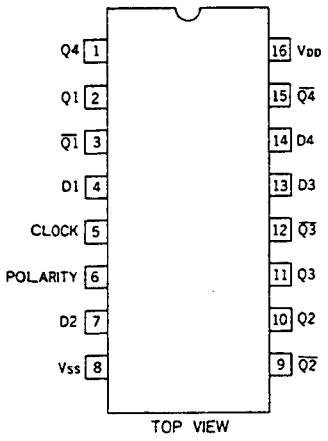


TRUTH TABLE

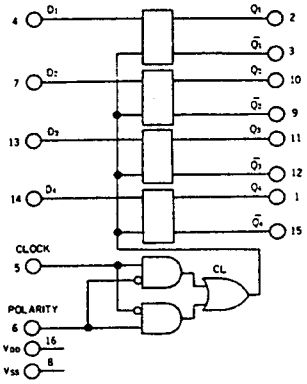
A	B	J
0	0	0
1	0	1
0	1	1
1	1	0

WHERE "1"=HIGH LEVEL
"0"=LOW LEVEL

*TC4042BP (Quadruple Clock "D" Latch) [TOSHIBA]



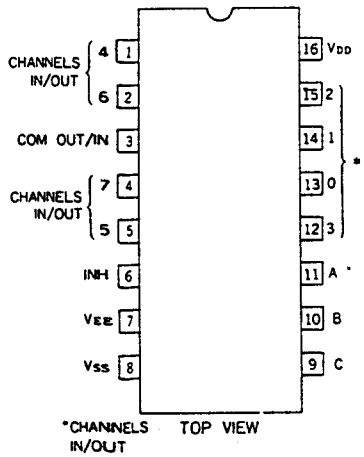
Block Diagram



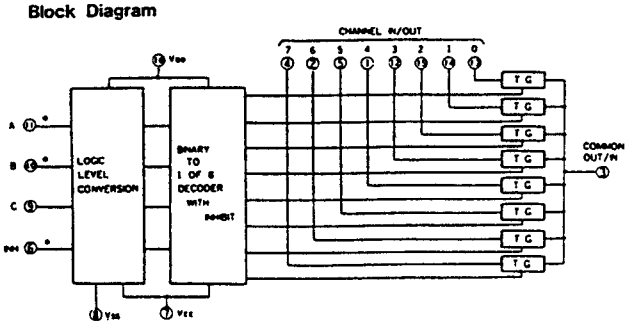
TRUTH TABLE

CLOCK	POLARITY	Q
0	0	D
↗	0	LATCH
1	1	D
↘	1	LATCH

*TC4051BP (Single 8-Channel Multiplexer/Demultiplexer) [TOSHIBA]



Block Diagram



TRUTH TABLE

INPUT STATES				"ON" CHANNEL(S)
INHIBIT	C	B	A	
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	NONE

X = Don't care

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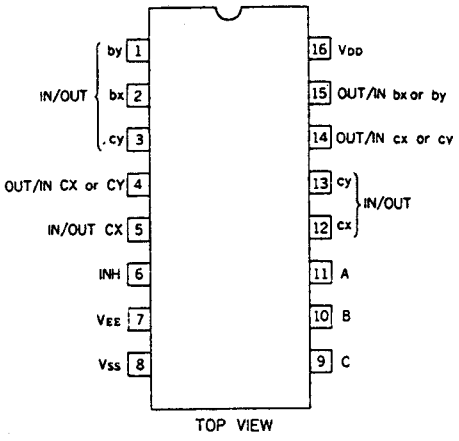
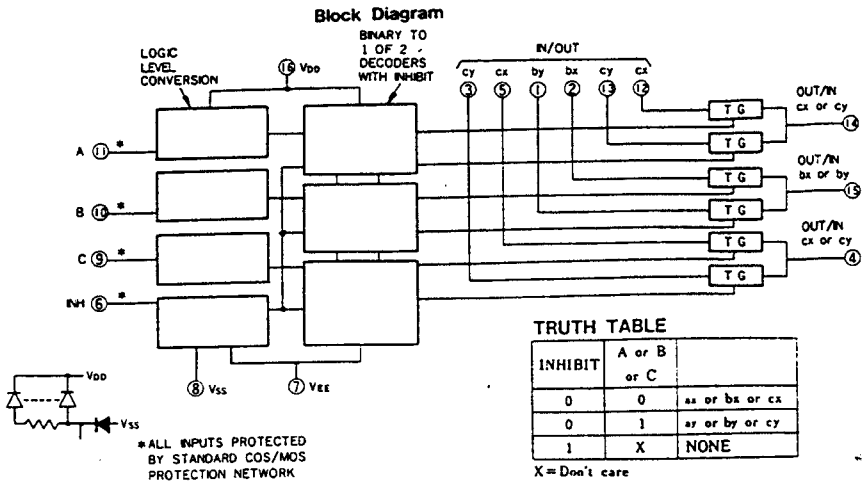
*TC4053BP (Triple-2 Channel Multiplexer/Demultiplexer) [TOSHIBA]



Block Diagram

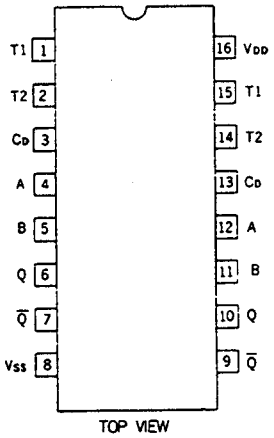


TRUTH TABLE

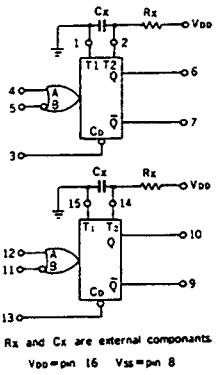
INHIBIT	A or B or C	
0	0	ax or bx or cx
0	1	ay or by or cy
1	X	NONE

X = Don't care

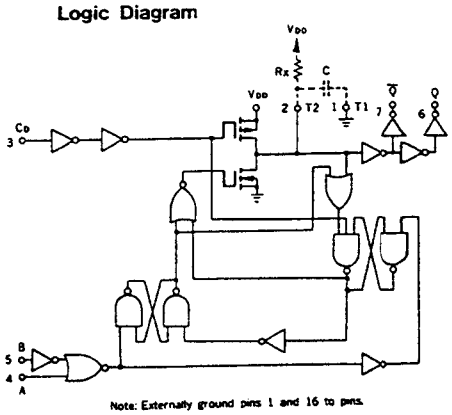
*TC4528BP (Dual Monostabel Multivibrator) [TOSHIBA]



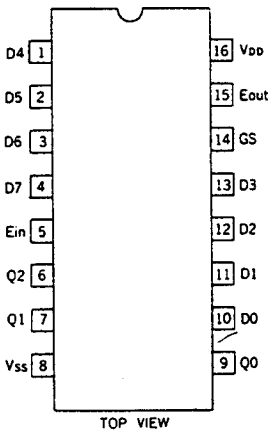
Block Diagram



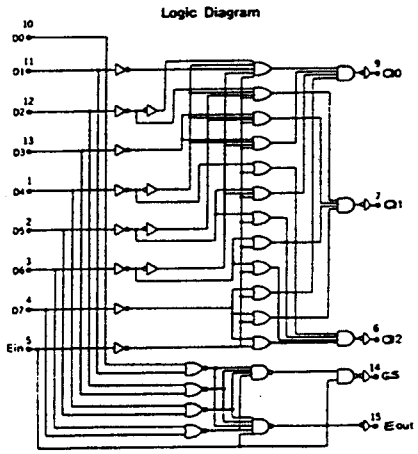
Logic Diagram



*TC4532BP (8-Bit Priority Encorder) [TOSHIBA]



Logic Diagram

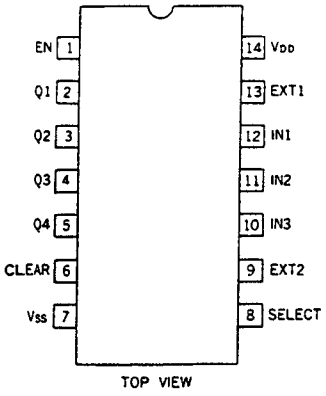


TRUTH TABLE

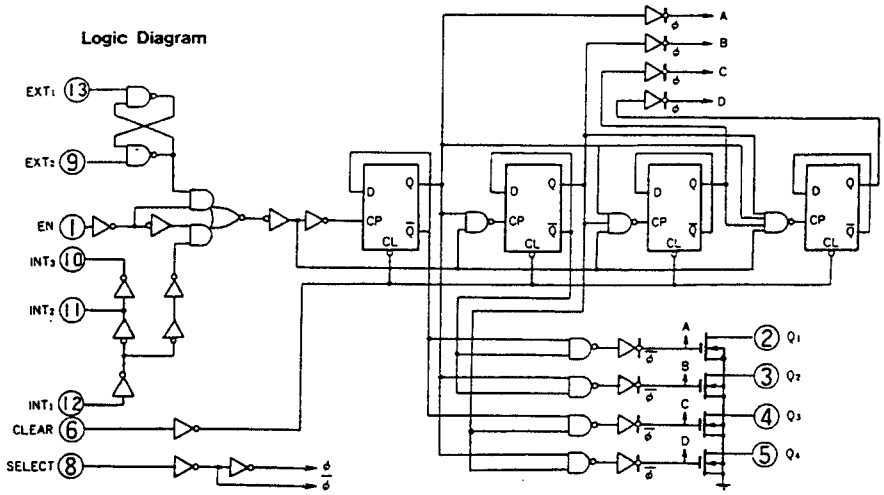
INPUT									OUTPUT				
Ein	D7	D6	D5	D4	D3	D2	D1	D0	GS	Q2	Q1	Q0	Eout
0	X	X	X	X	X	X	X	X	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	1
1	1	X	X	X	X	X	X	X	1	1	1	1	0
1	0	1	X	X	X	X	X	X	1	1	1	0	0
1	0	0	1	X	X	X	X	X	1	1	0	1	0
1	0	0	0	1	X	X	X	X	1	1	0	0	0
1	0	0	0	0	1	X	X	X	1	0	1	1	0
1	0	0	0	0	0	1	X	X	1	0	1	0	0
1	0	0	0	0	0	0	1	X	1	0	0	1	0
1	0	0	0	0	0	0	0	1	1	0	0	0	0

X = Don't Care

*TC5018P (Binary Counters) [TOSHIBA]



Logic Diagram

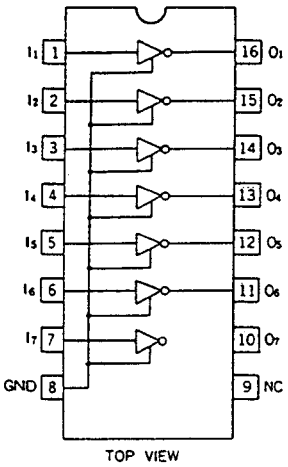


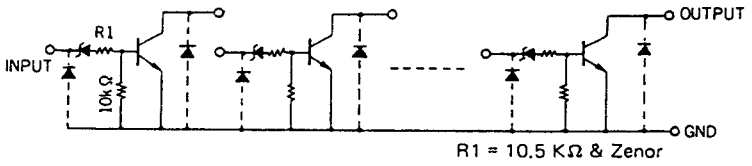
TRUTH TABLE

INPUTS						OUTPUTS			
IN1	EXT1	EXT2	EN	SELECT	CLEAR	Q1	Q2	Q3	Q4
※	CP	CP	L	L	L	S	S	S	S
CP	※	※	H	L	L	S	S	S	S
※	CP	CP	L	H	L	C	C	C	C
CP	※	※	H	H	L	C	C	C	C
※	※	※	※	L	H	L	H	H	H
※	※	※	※	H	H	L	L	L	L

C : COUNT
S : SCAN
CP: CLOCK PLUSE
※ : "H" or "L"

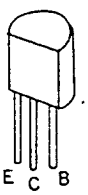
*TD62502P (Transistor Array) [TOSHIBA]



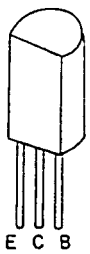


R1 = 10.5 KΩ & Zenor

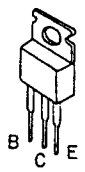
*Tr.



2SA564R
2SC828R
2SC829C
2SA838C
2SC752GY



2SC1509R



2SB856C
2SC1061B

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SECTION 8
ELECTRICAL PARTS LIST

1. **IMPORTANT SAFETY NOTICE**
Parts identified by the ⚠ symbol are critical for safety. Replace with parts number specified. For maximum reliability and performance, all other replacement parts should be identical to those specified.

2. Abbreviations in this list are as follows:

RESISTORS – All resistance values are in ohms (Ω).

K	:	1 000
M	:	1 000 000
CR	:	Carbon Resistor
Comp. R	:	Composition Resistor
WR	:	Wire Wound Resistor
OMR	:	Oxide Metal Film Resistor
VR	:	Variable Resistor (Potentiometer)
MFR	:	Metal Film Resistor

CAPACITORS – All capacitance values are in μF, unless otherwise indicated.

P	:	μμF
C Cap	:	Ceramic Capacitor
E Cap	:	Electrolytic Capacitor
FM Cap	:	Film Mica Capacitor
MM Cap	:	Metalized Mylar Capacitor
MP Cap	:	Metalized Paper Capacitor
MY Cap	:	Mylar Capacitor
NP Cap	:	Non-polar Capacitor
PC Cap	:	Polycarbonate Capacitor
PP Cap	:	Poly Pro Capacitor
PS Cap	:	Polystyrol Capacitor
T Cap	:	Tantalum Capacitor
TR Cap	:	Trimmer Capacitor

Tolerances of resistors or capacitors are as follows:

M	:	± 20 %
K	:	± 10 %
J	:	± 5 %
G	:	± 2 %
F	:	± 1 %

8.1 MAIN UNIT

8.1.1 CP Board Ass'y SCK1040-00A

Symbol No.	Part No.	Part Name	Description
IC 1	TC4051BP	I.C.	TOSHIBA
IC 2	"	"	"
IC 3	"	"	"
IC 4	"	"	"
IC 5	"	"	"
IC 6	"	"	"
IC 7	"	"	"
IC 8	"	"	"
IC 9	TC4042BP	"	"
IC10	"	"	"
IC11	"	"	"
IC12	TC4053BP	"	"
IC13	TC4042BP	"	"
IC14	"	"	"
IC15	TC4009UBP	"	"
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	"	"	"
Q 3	"	"	"
Q 4	"	"	"
Q 5	"	"	"
Q 6	"	"	"
Q 7	"	"	"
Q 8	"	"	"
Q 9	"	"	"
Q10	"	"	"
Q11	"	"	"
Q12	"	"	"
Q13	"	"	"
Q14	"	"	"
Q15	"	"	"
Q16	"	"	"
Q17	"	"	"
Q18	"	"	"
Q19	"	"	"
Q20	"	"	"
Q21	"	"	"
Q22	"	"	"
Q23	"	"	"
Q24	"	"	"
Q25	"	"	"
Q26	"	"	"
Q27	"	"	"
Q28	"	"	"
Q29	"	"	"
Q30	"	"	"
Q31	"	"	"
Q32	"	"	"
Q33	"	"	"
Q34	"	"	"
Q35	"	"	"
Q36	"	"	"
Q37	"	"	"
Q38	"	"	"
Q39	"	"	"
Q40	"	"	"
Q41	"	"	"
Q42	"	"	"
Q43	"	"	"
Q44	"	"	"
Q45	"	"	"
Q46	"	"	"
Q47	"	"	"

Symbol No.	Part No.	Part Name	Description
Q48	2SC828R	Transistor	MATSUSHITA
Q49	"	"	"
Q50	"	"	"
Q51	"	"	"
Q52	"	"	"
Q53	"	"	"
Q54	"	"	"
Q55	"	"	"
Q56	"	"	"
Q58	"	"	"
Q59	"	"	"
Q60	"	"	"
Q61	"	"	"
Q62	"	"	"
Q63	"	"	"
Q64	"	"	"
Q65	"	"	"
Q66	"	"	"
Q67	"	"	"
Q68	2SC829C	"	"
Q69	2SC1509R	"	"
Q70	"	"	"
Q71	–	–	
Q72	–	–	
Q73	–	–	
Q74	–	–	
Q75	2SA838C	Transistor	NEC
Q76	2SC828R	"	MATSUSHITA
Q77	–	–	
Q78	–	–	
Q79	–	–	
Q80	–	–	
Q81	–	–	
Q82	–	–	
Q83	2SA838C	Transistor	NEC
Q84	2SC828R	"	MATSUSHITA
Q85	"	"	"
Q86	"	"	"
Q90	2SA838C	"	NEC
D 1	MA165	Silicon Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	"	"	"
D 7	"	"	"
D 8	"	"	"
D 9	"	"	"
D10	"	"	"
D11	"	"	"
D12	"	"	"
D13	"	"	"
D14	"	"	"
D15	"	"	"
D16	"	"	"
D17	"	"	"
D18	"	"	"
D19	"	"	"
D20	"	"	"
D21	"	"	"
D22	"	"	"
D23	"	"	"
D24	"	"	"

Symbol No.	Part No.	Part Name	Description
D25	MA165	Silicon Diode	MATSUSHITA
D26	"	"	"
D27	"	"	"
D28	"	"	"
D29	"	"	"
D30	"	"	"
D31	"	"	"
D32	"	"	"
D33	"	"	"
D34	"	"	"
D35	"	"	"
D36	"	"	"
D37	"	"	"
D38	"	"	"
D39	"	"	"
D40	"	"	"
D41	"	"	"
D42	"	"	"
ZD 1	HZ16L2	Zener Diode	HITACHI (16 V)
ZD 2	–	–	
ZD 3	–	–	
ZD 4	–	–	
ZD 5	HZ12L1L	Zener Diode	HITACHI (12 V)
R 1	QRD167J-331	CR	330 1/6 W J
R 2	" -473	"	47 K " "
R 3	" -473	"	47 K " "
R 4	" -152	"	1.5 K " "
R 5	" -331	"	330 " "
R 6	–	–	
R 7	QRD167J-823	CR	82 K 1/6 W J
R 8	" -331	"	330 " "
R 9	–	–	
R10	QRD167J-823	CR	82 K 1/6 W J
R11	" -331	"	330 " "
R12	–	–	
R13	QRD167J-823	CR	82 K 1/6 W J
R14	" -331	"	330 " "
R15	–	–	
R16	QRD167J-823	CR	82 K 1/6 W J
R17	" -331	"	330 " "
R18	" -473	"	47 K " "
R19	" -473	"	47 K " "
R20	" -152	"	1.5 K " "
R21	" -331	"	330 " "
R22	–	–	
R23	QRD167J-823	CR	82 K 1/6 W J
R24	" -331	"	330 " "
R25	–	–	
R26	QRD167J-823	CR	82 K 1/6 W J
R27	" -331	"	330 " "
R28	–	–	
R29	QRD167J-823	CR	82 K 1/6 W J
R30	" -331	"	330 " "
R31	–	–	
R32	QRD167J-823	CR	82 K 1/6 W J
R33	" -331	"	330 " "
R34	" -473	"	47 K " "
R35	" -473	"	47 K " "
R36	" -152	"	1.5 K " "
R37	" -331	"	330 " "

Symbol No.	Part No.	Part Name	Description
R38	–	–	
R39	QRD167J-823	CR	82 K 1/6 W J
R40	" -331	"	330 " "
R41	–	–	
R42	QRD167J-823	CR	82 K 1/6 W J
R43	" -331	"	330 " "
R44	–	–	
R45	QRD167J-823	CR	82 K 1/6 W J
R46	" -331	"	330 " "
R47	–	–	
R48	QRD167J-823	CR	82 K 1/6 W J
R49	" -331	"	330 " "
R50	" -473	"	47 K " "
R51	" -473	"	47 K " "
R52	" -152	"	1.5 K " "
R53	" -331	"	330 " "
R54	–	–	
R55	QRD167J-823	CR	82 K 1/6 W J
R56	" -331	"	330 " "
R57	–	–	
R58	QRD167J-823	CR	82 K 1/6 W J
R59	" -331	"	330 " "
R60	–	–	
R61	QRD167J-823	CR	82 K 1/6 W J
R62	" -331	"	330 " "
R63	–	–	
R64	QRD167J-823	CR	82 K 1/6 W J
R65	" -560	"	56 " "
R66	" -560	"	56 " "
R67	" -560	"	56 " "
R68	" -560	"	56 " "
R69	" -560	"	56 " "
R70	" -102	"	1 K " "
R71	" -102	"	1 K " "
R72	" -102	"	1 K " "
R73	" -102	"	1 K " "
R74	" -560	"	56 " "
R75	" -560	"	56 " "
R76	" -560	"	56 " "
R77	" -331	"	330 " "
R78	" -473	"	47 K " "
R79	" -473	"	47 K " "
R80	" -152	"	1.5 K " "
R81	" -331	"	330 " "
R82	–	–	
R83	QRD167J-823	CR	82 K 1/6 W J
R84	" -331	"	330 " "
R85	–	–	
R86	QRD167J-823	CR	82 K 1/6 W J
R87	" -331	"	330 " "
R88	–	–	
R89	QRD167J-823	CR	82 K 1/6 W J
R90	" -331	"	330 " "
R91	–	–	
R92	QRD167J-823	CR	82 K 1/6 W J
R93	" -331	"	330 " "
R94	" -473	"	47 K " "
R95	" -473	"	47 K " "
R96	" -152	"	1.5 K " "
R97	" -331	"	330 " "
R98	–	–	
R99	QRD167J-823	CR	82 K 1/6 W J
R100	" -331	"	330 " "
R101	–	–	
R102	QRD167J-823	CR	82 K 1/6 W J

Symbol No.	Part No.	Part Name	Description
R103	QRD167J-331	CR	330 1/6 W J
R104	–	–	
R105	QRD167J-823	CR	82 K 1/6 W J
R106	" -331	"	330 " "
R107	–	–	
R108	QRD167J-823	CR	82 K 1/6 W J
R109	–	–	
R110	QRD167J-331	CR	330 1/6 W J
R111	" -473	"	47 K " "
R112	" -473	"	47 K " "
R113	" -152	"	1.5 K " "
R114	" -331	"	330 " "
R115	–	–	
R116	QRD167J-823	CR	82 K 1/6 W J
R117	" -331	"	330 " "
R118	–	–	
R119	QRD167J-823	CR	82 K 1/6 W J
R120	" -331	"	330 " "
R121	–	–	
R122	QRD167J-823	CR	82 K 1/6 W J
R123	" -331	"	330 " "
R124	–	–	
R125	QRD167J-823	CR	82 K 1/6 W J
R126	–	–	
R127	QRD167J-331	CR	330 1/6 W J
R128	" -473	"	47 K " "
R129	" -473	"	47 K " "
R130	" -152	"	1.5 K " "
R131	" -331	"	330 " "
R132	–	–	
R133	QRD167J-823	CR	82 K 1/6 W J
R134	" -331	"	330 " "
R135	–	–	
R136	QRD167J-823	CR	82 K 1/6 W J
R137	" -331	"	330 " "
R138	–	–	
R139	QRD167J-823	CR	82 K 1/6 W J
R140	" -331	"	330 " "
R141	–	–	
R142	QRD167J-823	CR	82 K 1/6 W J
R143	–	–	
R144	QRD167J-331	CR	330 1/6 W J
R145	" -473	"	47 K " "
R146	" -473	"	47 K " "
R147	" -152	"	1.5 K " "
R148	" -102	"	1 K " "
R149	" -331	"	330 " "
R150	–	–	
R151	QRD167J-823	CR	82 K 1/6 W J
R152	" -331	"	330 " "
R153	–	–	
R154	QRD167J-823	CR	82 K 1/6 W J
R155	" -331	"	330 " "
R156	–	–	
R157	QRD167J-823	CR	82 K 1/6 W J
R158	" -102	"	1 K " "
R159	" -560	"	56 " "
R160	" -560	"	56 " "
R161	" -560	"	56 " "
R162	" -102	"	1 K " "
R163	" -331	"	330 " "
R164	" -473	"	47 K " "
R165	" -473	"	47 K " "
R166	" -152	"	1.5 K " "
R167	" -331	"	330 " "

Symbol No.	Part No.	Part Name	Description
R168	QRD167J-823	CR	82 K 1/6 W J
R169	–	–	
R170	QRD167J-102	CR	1 K 1/6 W J
R171	" -102	"	1 K " "
R172	" -331	"	330 " "
R173	" -473	"	47 K " "
R174	" -473	"	47 K " "
R175	" -152	"	1.5 K " "
R176	" -331	"	330 " "
R177	–	–	
R178	QRD167J-823	CR	82 K 1/6 W J
R179	" -331	"	330 " "
R180	" -473	"	47 K " "
R181	" -473	"	47 K " "
R182	" -182	"	1.8 K " "
R183	" -331	"	330 " "
R184	–	–	
R185	QRD167J-823	CR	82 K 1/6 W J
R186	" -331	"	330 " "
R187	" -473	"	47 K " "
R188	" -473	"	47 K " "
R189	" -152	"	1.5 K " "
R190	" -331	"	330 " "
R191	–	–	
R192	QRD167J-823	CR	82 K 1/6 W J
R193	" -331	"	330 " "
R194	" -473	"	47 K " "
R195	" -473	"	47 K " "
R196	" -152	"	1.5 K " "
R197	" -331	"	330 " "
R198	–	–	
R199	QRD167J-823	CR	82 K 1/6 W J
R200	" -331	"	330 " "
R201	–	–	
R202	QRD167J-823	CR	82 K 1/6 W J
R203	" -331	"	330 " "
R204	–	–	
R205	QRD167J-823	CR	82 K 1/6 W J
R206	" -332	"	3.3 K " "
R207	" -152	"	1.5 K " "
R208	" -331	"	330 " "
R209	" -153	"	15 K " "
R210	" -560	"	56 " "
R211	" -103	"	10 K " "
R212	SCV0047-501	VR	500
R213	QRD167J-122	CR	1.2 K 1/6 W J
R214	" -121	"	120 " "
R215	SCV0047-201	VR	200
R216	QRD167J-472	CR	4.7 K 1/6 W J
R217	" -272	"	2.7 K " "
R218	" -152	"	1.5 K " "
R219	" -272	"	2.7 K " "
R220	" -472	"	4.7 K " "
R221	" -101	"	100 " "
R222	" -472	"	4.7 K " "
R223	" -152	"	1.5 K " "
R224	" -821	"	820 " "
R225	" -182	"	1.8 K " "
R226	" -101	"	100 " "
R227	GC31868-270	MFR	27 1/4 W F
R228	" -270	"	27 " "
R229	QRD167J-103	CR	10 K 1/6 W J
R230	" -104	"	100 K " "
R231	" -104	"	100 K " "
R232	" -102	"	1 K " "

Symbol No.	Part No.	Part Name	Description
R233	QRD167J-104	CR	100 K 1/6 W J
R234	" -103	"	10 K " "
R235	" -103	"	10 K " "
R236	" -473	"	47 K " "
R237	" -123	"	12 K " "
R238	" -473	"	47 K 1/6 W J
R239	" -102	"	1 K " "
R240	" -103	"	10 K " "
R241	" -473	"	47 K " "
R242	" -103	"	10 K " "
R243	" -103	"	10 K " "
R244	" -102	"	1 K " "
R245	" -104	"	100 K " "
R246	" -102	"	1 K " "
R247	" -273	"	27 K " "
R248	" -152	"	1.5 K " "
R249	" -331	"	330 " "
R250	" -680	"	68 " "
R251	–	–	
R252	–	–	
R253	QRD167J-680	CR	68 1/6 W J
R254	–	–	
R255	–	–	
R256	–	–	
R257	–	–	
R258	–	–	
R259	QRD167J-680	CR	68 1/6 W J
R260	" -680	"	68 " "
R261	" -273	"	27 K " "
R262	" -152	"	1.5 K " "
R263	" -331	"	330 " "
R264	" -680	"	68 " "
R265	" -123	"	12 K " "
R266	–	–	
R267	QRD167J-680	CR	68 1/6 W J
R268	–	–	
R269	–	–	
R270	–	–	
R271	–	–	
R272	–	–	
R273	QRD167J-680	CR	68 1/6 W J
R274	" -680	"	68 " "
R275	" -273	"	27 K " "
R276	" -152	"	1.5 K " "
R277	" -331	"	330 " "
R278	" -680	"	68 " "
R279	" -123	"	12 K " "
R280	" -680	"	68 " "
R281	–	–	
R282	–	–	
R283	–	–	
R284	–	–	
R285	–	–	
R286	–	–	
R287	QRD167J-680	CR	68 1/6 W J
R288	" -680	"	68 " "
R289	" -680	"	68 " "
R290	" -680	"	68 " "
R291	" -680	"	68 " "
R292	" -273	"	27 K " "
R293	" -152	"	1.5 K " "
R294	" -331	"	330 " "
R295	" -471	"	470 " "
R296	" -123	"	12 K " "
R297	–	–	

Symbol No.	Part No.	Part Name	Description
R298	QRD167J-821	CR	820 1/6 W J
R299	" -390	"	39 " "
R300	SCV0047-501	VR	500
R301	QRD167J-102	CR	1 K 1/6 W J
R302	" -101	"	100 " "
R303	" -152	"	1.5 K " "
R304	" -680	"	68 " "
R305	" -680	"	68 " "
R306	" -680	"	68 " "
R307	" -104	"	100 K " "
R308	" -473	"	47 K " "
R309	" -101	"	100 " "
R310	" -101	"	100 " "
R311	" -101	"	100 " "
R312	" -101	"	100 " "
R313	" -101	"	100 " "
R314	" -101	"	100 " "
R315	" -101	"	100 " "
R316	" -101	"	2.2 K " "
R401	QRD167J-222	CR	2.2 K 1/6 W J
R402	" -332	"	3.3 K " "
R403	" -102	"	1 K " "
R404	" -103	"	10 K " "
C 1	QET61EM-107	E Cap	100 25 V
C 2	QET41ER-107	"	100 "
C 3	QET61EM-107	"	100 "
C 4	" -107	"	100 "
C 5	" -107	"	100 "
C 6	" -107	"	100 "
C 7	" -107	"	100 "
C 8	" -107	"	100 "
C 9	" -107	"	100 "
C10	" -107	"	100 "
C11	" -107	"	100 "
C12	" -107	"	100 "
C13	" -107	"	100 "
C14	" -107	"	100 "
C15	" -107	"	100 "
C16	" -107	"	100 "
C17	" -107	"	100 "
C18	" -107	"	100 "
C19	" -107	"	100 "
C20	" -107	"	100 "
C21	" -107	"	100 "
C22	" -107	"	100 "
C23	" -107	"	100 "
C24	" -107	"	100 "
C25	QCS31HJ-100	C Cap	10 P 50 V
C26	QET61EM-107	E Cap	100 25 V
C27	" -107	"	100 "
C28	" -107	"	100 "
C29	QCS31HJ-221	C Cap	220 P 50 V
C30	" -221	"	220 P "
C31	" -221	"	220 P "
C32	" -221	"	220 P "
C33	" -221	"	220 P "
C34	QET61EM-107	E Cap	100 25 V
C35	QFM31HK-104	MY Cap	0.1 50 V
C36	QET41ER-107	E Cap	100 25 V
C37	–	–	
C38	QET61EM-107	E Cap	100 25 V
C39	–	–	
C40	QET61EM-107	E Cap	100 25 V
C41	QFM31HK-104	MY Cap	0.1 50 V
C42	QET41ER-107	E Cap	100 25 V
C43	–	–	

Symbol No.	Part No.	Part Name	Description
C44	QET61EM-107	E Cap	100 25 V
C45	QET60JM-477	"	470 6.3 V
C46	–	–	
C47	QFM31HK-104	MY Cap	0.1 50 V
C48	QET41ER-107	E Cap	100 25 V
C49	QCF31EZ-103	C Cap	0.01 "
C50	QET61EM-107	E Cap	100 "
C51	–	–	
C52	QET41ER-107	E Cap	100 25 V
C53	QCF31EZ-103	C Cap	0.01 "
C54	QET61EM-107	E Cap	100 "
C55	QET40JR-477	E Cap	470 "
C56	QET61EM-107	E Cap	100 25 V
C57	–	–	
C58	–	–	
C59	–	–	
C60	QCS31HJ-221	C Cap	10 P 50 V
TP4–TP9	SCV0025-102	Test Point	
	SCV0304-00P	Connector	
	SCV0296-001	Card Pra.	

8.1.2 VIDEO Board Ass'y SCK1041-00A

Symbol No.	Part No.	Part Name	Description
IC 1	MC1495L	I.C.	MOTOROLA
IC 2	TC4053BP	"	TOSHIBA
IC 3	MC1495L	"	MOTOROLA
IC 4	"	"	"
IC 5	"	"	"
IC 6	"	"	"
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	"	"	"
Q 3	"	"	"
Q 4	2SA564R	"	"
Q 5	2SC752GY	"	TOSHIBA
Q 6	2SC828R	"	MATSUSHITA
Q 7	"	"	"
Q 8	2SC752GY	"	TOSHIBA
Q 9	2SC828R	"	MATSUSHITA
Q10	2SA564R	"	"
Q11	2SC828R	"	"
Q12	"	"	"
Q13	"	"	"
Q14	"	"	"
Q15	"	"	"
Q16	2SC752GY	"	TOSHIBA
Q17	2SC828R	"	MATSUSHITA
Q18	2SA564R	"	"
Q19	2SC828R	"	"
Q20	"	"	"
Q21	"	"	"
Q22	"	"	"
Q23	"	"	"
Q24	2SA564R	"	"
Q25	2SC828R	"	"
Q26	"	"	"
Q27	"	"	"
Q28	"	"	"
Q29	2SC752GY	"	TOSHIBA
Q30	2SC828R	"	MATSUSHITA
Q31	2SA564R	"	"
Q32	2SC828R	"	"
Q33	"	"	"
Q34	"	"	"
Q35	"	"	"
Q36	2SC752GY	"	TOSHIBA
Q37	2SC828R	"	MATSUSHITA
Q38	2SA564R	"	"
Q39	2SC828R	"	"
Q40	"	"	"
Q41	"	"	"
Q42	"	"	"
Q43	"	"	"
Q44	"	"	"
Q45	"	"	"
Q46	2SC752GY	"	TOSHIBA
Q47	2SC828R	"	MATSUSHITA
Q48	2SC829C	"	"
Q49	2SA564R	"	"
Q50	2SC828R	"	"
Q51	2SA564R	"	"
Q52	2SC1509R	"	"
Q53	"	"	"
Q54	2SC828R	"	"
Q55	2SA564R	"	"
Q56	2SC828R	"	"

Symbol No.	Part No.	Part Name	Description
Q57	2SC752GY	Transistor	TOSHIBA
Q58	2SC828R	"	MATSUSHITA
Q59	"	"	"
Q60	"	"	"
Q61	2SC752GY	"	TOSHIBA
Q62	2SC828R	"	MATSUSHITA
Q63	2SA564R	"	"
Q64	—	—	
Q65	2SA564R	Transistor	MATSUSHITA
Q66	"	"	"
Q67	2SC828R	"	"
Q68	"	"	"
Q69	"	"	"
Q70	2SA564R	"	"
Q71	2SC828R	"	"
Q72	2SC752GY	"	TOSHIBA
Q73	2SA564R	"	MATSUSHITA
Q74	2SC828R	"	"
Q83	2SA564R	Transistor	MATSUSHITA
ZD 1	—	—	
ZD 2	HZ11A3L	Zener Diode	HITACHI (11 V)
ZD 3	HZ6B1L	"	" (6 V)
ZD 4	—	—	
ZD 5	HZ11A3L	Zener Diode	HITACHI (11 V)
ZD 6	—	—	
ZD 7	HZ11A3L	Zener Diode	HITACHI (11 V)
ZD 8	"	"	" (11 V)
ZD 9	HZ12A1L	"	" (12 V)
ZD10	HZ11A3L	"	" (11 V)
ZD11	—	—	
D 1	MA165	Silicon Diode	MATSUSHITA
D 2	"	"	"
R 1	QRD167J-102	CR	1 K 1/6 W J
R 2	" -101	"	100 " "
R 3	" -101	"	100 " "
R 4	" -272	"	2.7 K " "
R 5	" -272	"	2.7 K " "
R 6	" -472	"	4.7 K " "
R 7	" -393	"	39 K " "
R 8	" -101	"	100 " "
R 9	" -103	"	10 K " "
R10	" -103	"	10 K " "
R11	" -331	"	330 " "
R12	" -102	"	1 K " "
R13	" -101	"	100 " "
R14	SCV0047-501	VR	500
R15	QRD167J-272	CR	2.7 K 1/6 W J
R16	" -272	"	2.7 K " "
R17	" -472	"	4.7 K " "
R18	" -393	"	39 K " "
R19	" -103	"	10 K " "
R20	" -101	"	100 " "
R21	" -103	"	10 K " "
R22	" -331	"	330 " "
R23	" -562	"	5.6 K " "
R24	GC31868-152	MFR	1.5 K 1/4 W F
R25	" -152	"	1.5 K " "
R26	QRD167J-392	CR	3.9 K 1/6 W J
R27	" -102	"	1 K " "

Symbol No.	Part No.	Part Name	Description
R28	QRD167J-332	CR	3.3 K 1/6 W J
R29	" -103	"	10 K " "
R30	" -562	"	5.6 K " "
R31	" -272	"	2.7 K " "
R32	" -101	"	100 " "
R33	" -101	"	100 " "
R34	" -560	"	56 " "
R35	" -560	"	56 " "
R36	" -272	"	2.7 K " "
R37	" -682	"	6.8 K " "
R38	" -102	"	1 K " "
R39	" -101	"	100 " "
R40	—	—	
R41	SCV0047-501	VR	500
R42	QRD167J-101	CR	100 1/6 W J
R43	" -472	"	4.7 K " "
R44	" -101	"	100 " "
R45	—	—	
R46	SCV0047-501	VR	500
R47	QRD167J-101	CR	100 1/6 W J
R48	" -472	"	4.7 K " "
R49	" -182	"	1.8 K " "
R50	" -101	"	100 " "
R51	" -101	"	100 " "
R52	" -561	"	560 " "
R53	" -152	"	1.5 K " "
R54	" -272	"	2.7 K " "
R55	" -472	"	4.7 K " "
R56	" -393	"	39 K " "
R57	" -101	"	100 " "
R58	" -272	"	2.7 K " "
R59	" -101	"	100 " "
R60	" -103	"	10 K " "
R61	GC31868-822	MFR	8.2 K 1/4 W F
R62	" -680	"	68 " "
R63	" -680	"	68 " "
R64	SCV0046-501	VR	500
R65	GC31868-332	MFR	3.3 K 1/4 W F
R66	QRD167J-102	CR	1 K 1/6 W J
R67	" -101	"	100 " "
R68	SCV0047-501	VR	500
R69	QRD167J-272	CR	2.7 K 1/6 W J
R70	" -101	"	100 " "
R71	" -470	"	47 " "
R72	" -272	"	2.7 K " "
R73	SCV0046-501	VR	500
R74	QRD167J-103	CR	10 K 1/6 W J
R75	" -152	"	1.5 K " "
R76	" -823	"	82 K " "
R77	" -823	"	82 K " "
R78	" -104	"	100 K " "
R79	" -102	"	1 K " "
R80	" -272	"	2.7 K " "
R81	" -393	"	39 K " "
R82	" -472	"	4.7 K " "
R83	SCV0046-501	VR	500
R84	QRD167J-101	CR	100 1/6 W J
R85	SCV0047-501	VR	500
R86	QRD167J-272	CR	2.7 K 1/6 W J
R87	" -103	"	10 K " "
R88	" -101	"	100 " "
R89	" -331	"	330 " "
R90	—	—	
R91	QRD167J-102	CR	1 K 1/6 W J
R92	" -562	"	5.6 K " "

Symbol No.	Part No.	Part Name	Description
R93	QRD167J-562	CR	5.6 K 1/6 W J
R94	GC31868-152	MFR	1.5 K 1/4 W F
R95	" -152	"	1.5 K " "
R96	QRD167J-392	CR	3.9 K 1/6 W J
R97	" -332	"	3.3 K " "
R98	" -103	"	10 K " "
R99	" -392	"	3.9 K " "
R100	" -560	"	56 " "
R101	" -560	"	56 " "
R102	" -331	"	330 " "
R103	" -391	"	390 " "
R104	" -272	"	2.7 K " "
R105	" -682	"	6.8 K " "
R106	" -102	"	1 K " "
R107	" -101	"	100 " "
R108	" -101	"	100 " "
R109	SCV0047-501	VR	500
R110	QRD167J-101	CR	100 1/6 W J
R111	—	—	
R112	QRD167J-472	CR	4.7 K 1/6 W J
R113	" -101	"	100 " "
R114	—	—	
R115	QRD167J-101	CR	100 1/6 W J
R116	SCV0047-501	VR	500
R117	QRD167J-101	CR	100 1/6 W J
R118	" -472	"	4.7 K " "
R119	" -182	"	1.8 K " "
R120	" -101	"	100 " "
R121	" -272	"	2.7 K " "
R122	" -472	"	4.7 K " "
R123	" -393	"	39 K " "
R124	" -103	"	10 K " "
R125	" -101	"	100 " "
R126	" -472	"	4.7 K " "
R127	" -101	"	100 " "
R128	" -331	"	330 " "
R129	" -472	"	4.7 K " "
R130	" -472	"	4.7 K " "
R131	" -102	"	1 K " "
R132	" -272	"	2.7 K " "
R133	" -103	"	10 K " "
R134	" -393	"	39 K " "
R135	" -103	"	10 K " "
R136	" -101	"	100 " "
R137	" -472	"	4.7 K " "
R138	GC31868-102	MFR	1 K 1/4 W F
R139	" -102	"	1 K " "
R140	QRD167J-562	CR	5.6 K 1/6 W J
R141	" -392	"	3.9 K " "
R142	" -332	"	3.3 K " "
R143	" -103	"	10 K " "
R144	" -392	"	3.9 K " "
R145	" -561	"	560 " "
R146	" -561	"	560 " "
R147	" -562	"	5.6 K " "
R148	" -272	"	2.7 K " "
R149	" -682	"	6.8 K " "
R150	" -102	"	1 K " "
R151	" -101	"	100 " "
R152	" -101	"	100 " "
R153	" -101	"	100 " "
R154	" -101	"	100 " "
R155	SCV0047-501	VR	500
R156	QRD167J-101	CR	100 1/6 W J
R157	" -472	"	4.7 K " "

Symbol No.	Part No.	Part Name	Description
R158	QRD167J-101	CR	100 1/6 W J
R159	SCV0047-501	VR	500
R160	QRD167J-101	CR	100 1/6 W J
R161	" -182	"	1.8 K " "
R162	" -272	"	2.7 K " "
R163	" -682	"	6.8 K " "
R164	" -102	"	1 K " "
R165	" -182	"	1.8 K " "
R166	SCV0047-501	VR	500
R167	" -501	"	500
R168	QRD167J-101	CR	100 1/6 W J
R169	" -272	"	2.7 K " "
R170	—	—	
R171	QRD167J-393	CR	39 K 1/6 W J
R172	" -101	"	100 " "
R173	" -103	"	10 K " "
R174	" -103	"	10 K " "
R175	" -273	"	27 K " "
R176	" -153	"	15 K " "
R177	" -222	"	2.2 K " "
R178	" -102	"	1 K " "
R179	" -390	"	39 " "
R180	GC31868-101	MFR	100 1/4 W F
R181	QRD167J-152	CR	1.5 K 1/6 W J
R182	GC31868-101	MFR	100 1/4 W F
R183	QRD167J-750	CR	75 1/6 W J
R184	" -102	"	1 K " "
R185	" -103	"	10 K " "
R186	" -331	"	330 " "
R187	" -332	"	3.3 K " "
R188	—	—	
R189	QRD167J-562	CR	5.6 K 1/6 W J
R190	" -560	"	56 " "
R191	" -273	"	27 K " "
R192	" -153	"	15 K " "
R193	" -472	"	4.7 K " "
R194	" -103	"	10 K " "
R195	" -393	"	39 K " "
R196	" -472	"	4.7 K " "
R197	" -102	"	1 K " "
R198	" -562	"	5.6 K " "
R199	GC31868-152	MFR	1.5 K 1/4 W F
R200	" -152	"	1.5 K " "
R201	QRD167J-392	CR	3.9 K 1/6 W J
R202	" -332	"	3.3 K " "
R203	" -103	"	10 K " "
R204	" -392	"	3.9 K " "
R205	" -562	"	5.6 K " "
R206	" -272	"	2.7 K " "
R207	" -682	"	6.8 K " "
R208	" -102	"	1 K " "
R209	" -101	"	100 " "
R210	" -101	"	100 " "
R211	" -560	"	56 " "
R212	" -561	"	560 " "
R213	—	—	
R214	QRD167J-101	CR	100 1/6 W J
R215	SCV0047-501	VR	500
R216	QRD167J-101	CR	100 1/6 W J
R217	" -101	"	100 " "
R218	" -101	"	100 " "
R219	SCV0047-501	VR	500
R220	QRD167J-101	CR	100 1/6 W J
R221	" -182	"	1.8 K " "
R222	" -101	"	100 " "

Symbol No.	Part No.	Part Name	Description
R223	QRD167J-332	CR	3.3 K 1/6 W J
R224	" -822	"	8.2 K " "
R225	SCV0047-102	VR	1 K
R226	QRD167J-332	CR	3.3 K 1/6 W J
R227	SCV0046-101	VR	100
R228	GC31868-103	MFR	10 K 1/4 W F
R229	" -330	"	33 " "
R230	" -332	"	3.3 K " "
R231	QRD167J-393	CR	39 K 1/6 W J
R232	" -101	"	100 " "
R233	" -103	"	10 K " "
R234	" -272	"	2.7 K " "
R235	" -102	"	1 K " "
R236	" -101	"	100 " "
R237	" -750	"	75 " "
R238	" -272	"	2.7 K " "
R239	" -103	"	10 K " "
R240	" -393	"	39 K " "
R241	" -103	"	10 K " "
R242	" -101	"	100 " "
R243	" -103	"	10 K " "
R244	" -561	"	560 " "
R245	—	—	
R246	QRD167J-331	CR	330 1/6 W J
R247	" -472	"	4.7 K " "
R248	" -103	"	10 K " "
R249	" -101	"	100 " "
R250	" -560	"	56 " "
R251	" -562	"	5.6 K " "
R252	" -332	"	3.3 K " "
R253	—	—	
R254	QRD167J-392	CR	3.9 K 1/6 W J
R255	" -101	"	100 " "
R256	" -101	"	100 " "
R257	" -561	"	560 " "
R258	" -561	"	560 " "
R259	" -562	"	5.6 K " "
R260	" -101	"	100 " "
R261	" -153	"	15 K " "
R262	" -102	"	1 K " "
R263	—	—	
R264	QRD167J-103	CR	.10 K 1/6 W J
R300	GC31868-471	MFR	470 1/4 W F
R301	" -471	"	470 " "
R302	" -471	"	470 " "
R303	" -471	"	470 " "
R304	QRD167J-105	CR	1 M 1/6 W J
R305	" -105	"	1 M " "
R306	" -125	"	1.2 M " "
R307	" -185	"	1.8 M " "
R308	" -274	"	270 K " "
R309	" -472	"	4.7 K " "
R310	" -103	"	10 K " "
C 1	QET61EM-107	E Cap	100 25 V
C 2	" -107	"	100 "
C 3	QCS31HJ-101	C Cap	10 P 50 V
C 4	QFM31HK-333	MY Cap	0.33 "
C 5	QCS31HJ-271	C Cap	270 P "
C 6	QET61EM-106	E Cap	10 25 V
C 7	" -106	"	10 "
C 8	QET41ER-107	"	100 "

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Symbol No.	Part No.	Part Name	Description
C 9	QET61EM-107	E Cap	100 25 V
C10	QCS31HJ-5R0	C Cap	5 P 50 V
C11	QET61AM-227	E Cap	220 10 V
C12	QET61EM-106	"	10 25 V
C13	QET61AM-107	"	100 10 V
C14	QET61EM-107	"	100 25 V
C15	" -107	"	100 "
C16	QCS31HJ-101	C Cap	100 P 50 V
C17	QET61EM-106	E Cap	10 25 V
C18	QFM31HK-333	MY Cap	0.33 50 V
C19	QCS31HJ-271	C Cap	270 P "
C20	QET61EM-106	E Cap	10 25 V
C21	" -107	"	100 "
C22	QCS31HJ-5R0	C Cap	5 P 50 V
C23	QET61EM-106	E Cap	10 25 V
C24	" -106	"	10 "
C25	QET61AM-107	"	100 10 V
C26	QET61EM-106	"	10 25 V
C27	" -107	"	100 "
C28	—	—	
C29	QCS31HJ-1R0	C Cap	1 P 50 V
C30	QAT3001-010	TC Cap	300 P 250 V
C31	—	—	
C32	QCS31HJ-1R0	C Cap	1 P 50 V
C33	QAT3001-010	TC Cap	300 P 250 V
C34	QET61EM-107	E Cap	100 25 V
C35	" -107	E Cap	100 "
C36	" -107	"	100 "
C37	QET41ER-107	"	100 16 V
C38	" -107	"	100 "
C39	QFM31HK-333	MY Cap	0.33 50 V
C40	QCS31HJ-271	C Cap	270 P "
C41	QET61EM-106	E Cap	10 25 V
C42	" -106	"	10 "
C43	QCS31HJ-121	C Cap	120 P 50 V
C44	QET61EM-107	E Cap	100 25 V
C45	" -107	"	100 "
C46	QCS11HJ-390	C Cap	39 P 50 V
C47	" -101	"	100 P "
C48	QET61EM-106	E Cap	10 25 V
C49	QFM31HK-333	MY Cap	0.33 50 V
C50	QCS31HJ-271	C Cap	270 P "
C51	QET61EM-106	E Cap	10 25 V
C52	" -106	"	10 "
C53	QCS31HJ-120	C Cap	12 P 50 V
C54	QET61EM-107	E Cap	100 25 V
C55	" -107	"	100 "
C56	" -107	"	100 "
C57	QET61AM-227	"	220 10 V
C58	—	—	
C59	QCS31HJ-5R0	C Cap	5 P 50 V
C60	" -5R0	"	5 P "
C61	QET61EM-107	E Cap	100 25 V
C62	QET41AR-107	"	100 10 V
C63	QET61EM-106	"	10 25 V
C64	" -106	"	10 "
C65	" -106	"	10 "
C66	" -106	"	10 "
C67	" -107	"	100 "
C68	—	—	
C49	QCS31HJ-1R0	C Cap	1 P 50 V
C70	QAT3001-010	TC Cap	300 P 250 V
C71	—	—	
C72	QCS31HJ-1R0	C Cap	1 P 50 V
C73	QAT3001-010	TC Cap	300 P 250 V

Symbol No.	Part No.	Part Name	Description
C74	QET61EM-107	E Cap	100 25 V
C75	" -107	"	100 "
C76	QFM31HK-333	MY Cap	0.33 50 V
C77	QET61EM-106	E Cap	10 25 V
C78	QCS31HJ-271	C Cap	270 P 50 V
C79	QET61EM-106	E Cap	10 25 V
C80	" -107	"	100 "
C81	" -107	"	100 "
C82	" -106	"	10 "
C83	QET41ER-107	"	100 "
C84	" -107	"	100 "
C85	QEE41VM-224	T Cap	0.22 35 V
C86	QET61EM-106	E Cap	10 25 V
C87	QETA1EM-106	"	10 "
C88	QCS31HJ-271	C Cap	270 P 50 V
C89	QET61EM-106	E Cap	10 25 V
C90	—	—	
C91	QET61AM-227	E Cap	220 10 V
C92	QET61EM-106	"	10 25 V
C93	" -106	"	10 "
C94	—	—	
C95	QET61EM-106	E Cap	10 25 V
C96	QCS31HJ-1R0	C Cap	1 P 50 V
C97	" -100	"	10 P "
C98	—	—	
C99	QCS31HJ-470	C Cap	47 P 50 V
C100	QET61EM-107	E Cap	100 25 V
C101	" -107	"	100 "
C102	QET61AM-107	"	100 10 V
C103	" -227	"	220 "
C104	QET61EM-106	"	10 25 V
C105	" -106	"	10 "
C106	" -106	"	10 "
C107	QET61AM-107	"	100 10 V
C108	QET61EM-107	"	100 25 V
C109	" -106	"	10 "
C110	" -106	"	10 "
C111	QEE41VM-224	T Cap	0.22 35 V
C112	QCS31HJ-271	C Cap	270 P 50 V
C113	QET61EM-106	E Cap	10 25 V
C114	QET41ER-107	"	100 "
C115	" -107	"	100 "
C116	QET61AM-227	"	220 10 V
C117	QET61EM-107	"	100 25 V
C118	" -107	"	100 "
C119	QET61AM-107	"	100 10 V
C120	QCS31HJ-271	C Cap	270 P 50 V
C121	QET41ER-107	E Cap	10 25 V
C122	QFM31HK-104	MY Cap	0.1 35 V
C123	QEN61HM-105	E Cap	1 50 V
C124	QFM31HK-103	MY Cap	0.01 "
C125	QET61EM-107	E Cap	100 25 V
C126	" -107	"	100 "
C127	" -106	"	10 "
C128	—	—	
C129	QET61AM-227	E Cap	100 10 V
C130	QET61EM-106	"	10 25 V
C131	" -106	"	10 "
C132	QET61AM-107	"	100 10 V
C133	" -106	"	10 "
C134	QCS11HJ-100	C Cap	10 P 25 V
C135	QET61EM-106	E Cap	10 25 V
C136	QAT3001-010	TC Cap	300 P 250 V
C137	" -010	"	300 P "
C138	QET61EM-107	E Cap	100 25 V

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8.1.3 WFP Board Ass'y SCK1042-00A

Symbol No.	Part No.	Part Name	Description
C139	QET61EM-107	E Cap	100 25 V
C140	QEN41CM-106	NP Cap	10 16 V
C141	QCS31HJ-5R0	C Cap	5 P 50 V
C142	QET61EM-106	E Cap	10 25 V
C143	QET41ER-106	"	10 "
C144	" -107	"	100 "
C145	QET61EM-107	"	100 "
C146	" -107	"	100 "
C147	QEE41CM-475	T Cap	4.7 16 V
C148	QCS31HJ-271	C Cap	270 P 50 V
C149	QET61EM-106	E Cap	10 25 V
C150	" -106	"	10 "
C151	QCS31HJ-5R0	C Cap	5 P 50 V
L 1	PU48530-8R2K	Peaking Coil	8.2 μH K
L 2	" -8R2K	"	8.2 μH "
L 3	" -8R2K	"	8.2 μH "
L 4	" -8R2K	"	8.2 μH "
L 5	" -8R2K	"	8.2 μH "
L 6	" -8R2K	"	8.2 μH "
L 7	" -8R2K	"	8.2 μH "
L 8	" -8R2K	"	8.2 μH "
	SCV0304-00P	Connector	53 P
TP1—TP11	SCV0025-102	Test Point	
	SCV0296-001	Card Pra.	

Symbol No.	Part No.	Part Name	Description
IC 1	ICM7555IPA	I. C.	INTERSIL
IC 2	TC4053BP	"	TOSHIBA
IC 3	CA339E	"	RCA
IC 4	TC4030BP	"	TOSHIBA
IC 5	TC4051BP	"	"
IC 6	ICM7555IPA	"	INTERSIL
IC 7	"	"	"
IC 8	TC4011BP	"	TOSHIBA
IC 9	TC4051BP	"	"
IC10	TC4053BP	"	"
IC11	"	"	"
IC12	TC4051BP	"	"
IC13	"	"	"
IC14	"	"	"
IC15	"	"	"
IC16	MC1459L	"	MOTOROLA
IC17	"	"	"
IC18	TC4053BP	"	TOSHIBA
IC19	CA3240E	"	RCA
IC20	ICM7555IPA	"	INTERSIL
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	2SA564R	"	"
Q 3	2SC828R	"	"
Q 4	"	"	"
Q 5	2SA564R	"	"
Q 6	2SC828R	"	"
Q 7	—	—	
Q 8	2SA564R	Transistor	MATSUSHITA
Q 9	2SC828R	"	"
Q10	"	"	"
Q11	"	"	"
Q12	"	"	"
Q13	"	"	"
Q14	"	"	"
Q15	"	"	"
Q16	"	"	"
Q17	"	"	"
Q18	"	"	"
Q19	—	—	
Q20	2SA564R	Transistor	MATSUSHITA
Q21	2SC828R	"	"
Q22	"	"	"
Q23	"	"	"
Q24	"	"	"
Q25	"	"	"
Q26	"	"	"
Q27	2SA564R	"	"
Q28	—	—	
Q29	2SC828R	Transistor	MATSUSHITA
Q30	"	"	"
Q31	"	"	"
Q32	"	"	"
Q33	"	"	"
Q34	"	"	"
Q35	"	"	"
Q36	"	"	"
Q37	—	—	
Q38	2SA564R	Transistor	MATSUSHITA
Q39	"	"	"
Q40	2SC564R	"	"
Q41	"	"	"
Q42	"	"	"

Symbol No.	Part No.	Part Name	Description
Q43	2SC828R	Transistor	MATSUSHITA
Q44	"	"	"
Q45	—	—	
Q46	2SC828R	Transistor	MATSUSHITA
Q47	"	"	"
Q48	"	"	"
Q49	"	"	"
Q50	"	"	"
Q51	"	"	"
Q52	"	"	"
Q53	"	"	"
Q54	2SA564R	"	"
Q55	2SC828R	"	"
Q56	"	"	"
Q57	"	"	"
Q58	2SA564R	"	"
Q59	2SC828R	"	"
Q60	"	"	"
Q61	"	"	"
Q62	"	"	"
Q63	"	"	"
Q64	"	"	"
Q65	"	"	"
Q66	—	—	
Q67	2SC828R	Transistor	MATSUSHITA
Q68	"	"	"
Q69	"	"	"
Q70	"	"	"
Q71	"	"	"
Q72	—	—	
Q73	2SC828R	Transistor	MATSUSHITA
Q74	"	"	"
Q75	"	"	"
Q76	"	"	"
Q77	"	"	"
Q78	"	"	"
Q79	"	"	"
Q80	"	"	"
Q81	2SA564R	"	"
Q82	2SC828R	"	"
Q83	—	—	
Q84	2SC828R	Transistor	MATSUSHITA
Q85	"	"	"
D 1	MA165	Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	—	—	
D 5	MA165	Diode	MATSUSHITA
D 6	"	"	"
D 7	1S1555	"	TOSHIBA
D 8	OA91	"	MATSUSHITA
D 9	HZ3C2	Zener Diode	HITACHI (3 V)
D10	HZ11A3L	"	" (11 V)
D11	HZ3C2	"	" (3 V)
D12	HZ11A3L	"	" (11 V)
D13	OA91	Diode	MATSUSHITA
D14	SCV321(A)	V. Cap. Diode	
D15	"	"	
D16	"	"	
D20	1S1555	Diode	TOSHIBA

Symbol No.	Part No.	Part Name	Description
R 1	QRD167J-472	CR	4.7 K 1/6 W J
R 2	" -472	"	4.7 K " "
R 3	SCV0047-203	VR	20 K
R 4	QRD167J-223	CR	22 K 1/6 W J
R 5	" -223	"	22 K " "
R 6	" -392	"	3.9 K " "
R 7	" -473	"	47 K " "
R 8	" -332	"	3.3 K " "
R 9	SCV0047-202	VR	2 K
R10	QRD167J-471	CR	470 1/6 W J
R11	" -153	"	15 K " "
R12	SCV0046-202	VR	2 K
R13	QRD167J-222	CR	2.2 K 1/6 W J
R14	" -102	"	1 K " "
R15	" -473	"	47 K " "
R16	" -562	"	5.6 K " "
R17	" -222	"	2.2 K " "
R18	" -332	"	3.3 K " "
R19	" -472	"	4.7 K " "
R20	" -392	"	3.9 K " "
R21	" -562	"	5.6 K " "
R22	" -562	"	5.6 K " "
R23	" -473	"	47 K " "
R24	" -822	"	8.2 K " "
R25	" -153	"	15 K " "
R26	" -152	"	1.5 K " "
R27	SCV0047-502	VR	5 K
R28	QRD167J-682	CR	6.8 K 1/6 W J
R29	" -101	"	100 " "
R30	SCV0047-202	VR	2 K
R31	" -102	"	1 K
R32	QRD167J-561	CR	560 1/6 W J
R33	" -222	"	2.2 K " "
R34	SCV0047-102	VR	1 K
R35	QRD167J-271	CR	270 1/6 W J
R36	" -223	"	22 K " "
R37	SCV0047-203	VR	20 K
R38	QRD167J-333	CR	33 K 1/6 W J
R39	—	—	
R40	—	—	
R41	QRD167J-682	CR	6.8 K 1/6 W J
R42	SCV0047-102	VR	1 K
R43	QRD167J-102	CR	1 K 1/6 W J
R44	SCV0047-202	VR	2 K
R45	QRD167J-471	CR	470 1/6 W J
R46	" -682	"	6.8 K " "
R47	" -222	"	2.2 K " "
R48	" -103	"	10 K " "
R49	" -103	"	10 K " "
R50	" -103	"	10 K " "
R51	" -102	"	1 K " "
R52	SCV0047-501	VR	500
R53	QRD167J-102	CR	1 K 1/6 W J
R54	" -822	"	8.2 K " "
R55	" -273	"	27 K " "
R56	SCV0047-103	VR	10 K
R57	QRD167J-473	CR	47 K 1/6 W J
R58	" -472	"	4.7 K " "
R59	" -272	"	2.7 K " "
R60	" -123	"	12 K " "
R61	" -333	"	33 K " "
R62	" -332	"	3.3 K " "
R63	" -472	"	4.7 K " "
R64	" -682	"	6.8 K " "
R65	" -472	"	4.7 K " "

Symbol No.	Part No.	Part Name	Description
R66	QRD167J-472	CR	4.7 K 1/6 W J
R67	" -683	"	68 K " "
R68	SCV0047-503	VR	50 K
R69	QRD167J-153	CR	15 K 1/6 W J
R70	" -103	"	10 K " "
R71	" -681	"	680 " "
R72	" -683	"	68 K " "
R73	" -103	"	10 K " "
R74	SCV0047-102	VR	1 K
R75	QRD167J-561	CR	560 1/6 W J
R76	" -153	"	15 K " "
R77	SCV0046-202	VR	2 K
R78	QRD167J-222	CR	2.2 K 1/6 W J
R79	" -103	"	10 K " "
R80	" -332	"	3.3 K " "
R81	" -392	"	3.9 K " "
R82	" -222	"	2.2 K " "
R83	" -332	"	3.3 K " "
R84	" -472	"	4.7 K " "
R85	" -392	"	3.9 K " "
R86	" -562	"	5.6 K " "
R87	" -562	"	5.6 K " "
R88	" -473	"	47 K " "
R89	" -822	"	8.2 K " "
R90	" -273	"	27 K " "
R91	" -681	"	680 " "
R92	" -472	"	4.7 K " "
R93	" -222	"	2.2 K " "
R94	SCV0047-502	VR	5 K
R95	QRD167J-682	CR	6.8 K 1/6 W J
R96	" -101	"	100 " "
R97	SCV0047-102	VR	1 K
R98	QRD167J-561	CR	560 1/6 W J
R99	SCV0047-202	VR	2 K
R100	QRD167J-102	CR	1 K 1/6 W J
R101	SCV0047-102	VR	1 K
R102	QRD167J-471	CR	470 1/6 W J
R103	" -683	"	68 K " "
R104	SCV0047-503	VR	50 K
R105	QRD167J-333	CR	33 K 1/6 W J
R106	" -222	"	2.2 K " "
R107	" -223	"	22 K " "
R108	" -682	"	6.8 K " "
R109	" -102	"	1 K " "
R110	SCV0047-102	VR	1 K
R111	" -202	"	2 K
R112	QRD167J-102	CR	1 K 1/6 W J
R113	" -682	"	6.8 K " "
R114	" -222	"	2.2 K " "
R115	" -103	"	10 K " "
R116	" -103	"	10 K " "
R117	" -103	"	10 K " "
R118	" -102	"	1 K " "
R119	SCV0047-501	VR	500
R120	QRD167J-102	CR	1 K 1/6 W J
R121	" -822	"	8.2 K " "
R122	" -273	"	27 K " "
R123	SCV0047-103	VR	10 K
R124	QRD167J-473	CR	47 K 1/6 W J
R125	" 472	"	4.7 K " "
R126	" -272	"	2.7 K " "
R127	" -123	"	12 K " "
R128	" -333	"	33 K " "
R129	" -222	"	2.2 K " "
R130	" 471	"	4.7 K " "

Symbol No.	Part No.	Part Name	Description
R131	QRD167J-222	CR	2.2 K 1/6 W J
R132	SCV0047-202	VR	2 K
R133	QRD167J-332	CR	3.3 K 1/6 W J
R134	" -123	"	12 K " "
R135	" -473	"	47 K " "
R136	" -561	"	560 " "
R137	" -123	"	12 K " "
R138	" -473	"	47 K " "
R139	" -272	"	2.7 K " "
R140	" -472	"	4.7 K " "
R141	" -473	"	47 K " "
R142	" -473	"	47 K " "
R143	" -473	"	47 K " "
R144	" -473	"	47 K " "
R145	" -102	"	1 K " "
R146	" -122	"	1.2 K " "
R147	" -102	"	1 K " "
R148	" -682	"	6.8 K " "
R149	" -122	"	1.2 K " "
R150	" -473	"	47 K " "
R151	" -822	"	8.2 K " "
R152	" -102	"	1 K " "
R153	" -470	"	47 " "
R154	" -221	"	220 " "
R155	" -822	"	8.2 K " "
R156	" -332	"	3.3 K " "
R157	" -332	"	3.3 K " "
R158	" -102	"	1 K " "
R159	" -152	"	15 K " "
R160	" -103	"	10 K " "
R161	" -472	"	4.7 K " "
R162	" -103	"	10 K " "
R163	" -473	"	47 K " "
R164	" -104	"	100 K " "
R165	" -222	"	2.2 K " "
R166	" -103	"	10 K " "
R167	SCV0047-103	VR	10 K
R168	QRD167J-392	CR	3.9 K 1/6 W J
R169	" -223	"	22 K " "
R170	SCV0047-503	VR	50 K
R171	QRD167J-473	CR	47 K 1/6 W J
R172	" -104	"	100 K " "
R173	" -473	"	47 K " "
R174	–	–	
R175	–	–	
R176	QRD167J-222	CR	2.2 K 1/6 W J
R177	" -473	"	47 K " "
R178	–	–	
R179	QRD167J-273	CR	27 K 1/6 W J
R180	" -103	"	10 K " "
R181	" -473	"	47 K " "
R182	" -472	"	4.7 K " "
R183	" -562	"	5.6 K " "
R184	SCV0047-103	VR	10 K
R185	QRD167J-103	CR	10 K 1/6 W J
R186	" -562	"	5.6 K " "
R187	" -472	"	4.7 K " "
R188	" -472	"	4.7 K " "
R189	" -103	"	10 K " "
R190	" -221	"	220 " "
R191	" -682	"	6.8 K " "
R192	QRD167J-471	CR	470
R193	" -102	"	1 K 1/6 W J
R194	" -682	"	6.8 K " "
R195	" -122	"	1.2 K " "

Symbol No.	Part No.	Part Name	Description
R196	QRD167J-473	CR	47 K 1/6 W J
R197	" -822	"	8.2 K " "
R198	" -102	"	1 K " "
R199	" -470	"	47 " "
R200	" -822	"	8.2 K " "
R201	" -332	"	3.3 K " "
R202	" -152	"	1.5 K " "
R203	" -103	"	10 K " "
R204	" -103	"	10 K " "
R205	" -472	"	4.7 K " "
R206	" -332	"	3.3 K " "
R207	" -103	"	10 K " "
R208	" -333	"	33 K " "
R209	" -102	"	1 K " "
R210	" -272	"	2.7 K " "
R211	" -221	"	220 " "
R212	" -103	"	10 K " "
R213	" -393	"	39 K " "
R214	" -121	"	120 K " "
R215	" -103	"	10 K " "
R216	" -332	"	3.3 K " "
R217	" -222	"	2.2 K " "
R218	" -473	"	47 K " "
R219	" -472	"	4.7 K " "
R220	" -103	"	10 K " "
R221	" -393	"	39 K " "
R222	" -102	"	1 K " "
R223	" -472	"	4.7 K " "
R224	" -331	"	330 " "
R225	" -102	"	1 K " "
R226	" -103	"	10 K " "
R227	" -222	"	2.2 K " "
R228	" -561	"	560 " "
R229	" -561	"	560 " "
R230	" -100	"	10 " "
R231	" -470	"	47 " "
R232	" -682	"	6.8 K " "
R233	" -152	"	1.5 K " "
R234	" -223	"	22 K " "
R235	–	–	
R236	QRD167J-152	CR	1.5 K 1/6 W J
R237	" -152	"	1.5 K " "
R238	" -103	"	10 K " "
R239	" -222	"	2.2 K " "
R240	" -561	"	560 " "
R241	" -561	"	560 " "
R242	" -100	"	10 " "
R243	" -470	"	47 " "
R244	" -682	"	6.8 K " "
R245	SCV0046-102	VR	1 K
R246	QRD167J-152	CR	1.5 K 1/6 W J
R247	" -223	"	22 K " "
R248	–	–	
R249	QRD167J-822	CR	8.2 K 1/6 W J
R250	SCV0047-501	VR	500
R251	QRD167J-102	CR	1 K 1/6 W J
R252	" -472	"	4.7 K " "
R253	" -153	"	15 K " "
R254	" -103	"	10 K " "
R255	" -272	"	2.7 K " "
R256	" -153	"	15 K " "
R257	" -103	"	10 K " "
R258	" -272	"	2.7 K " "
R259	" -153	"	15 K " "
R260	" -103	"	10 K " "

Symbol No.	Part No.	Part Name	Description
R261	QRD167J-272	CR	2.7 K 1/6 W J
R262	" -681	"	680 " "
R263	" -122	"	1.2 K " "
R264	" -681	"	680 " "
R265	" -681	"	680 " "
R266	" -122	"	1.2 K " "
R267	" -681	"	680 " "
R268	" -681	"	680 " "
R269	" -122	"	1.2 K " "
R270	" -681	"	680 " "
R271	" -473	"	47 K " "
R272	" -473	"	47 K " "
R273	" -473	"	47 K " "
R274	" -272	"	2.7 K " "
R275	" -333	"	33 K " "
R276	" -153	"	15 K " "
R277	" -272	"	2.7 K " "
R278	" -153	"	15 K " "
R279	–	–	
R280	QRD167J-682	CR	6.8 K 1/6 W J
R281	" -561	"	560 " "
R282	" -561	"	560 " "
R283	" -562	"	5.6 K " "
R284	" -562	"	5.6 K " "
R285	GC31868-152	MFR	1.5 K 1/4 W F
R286	" -152	"	1.5 K " "
R287	QRD167J-101	CR	100 1/6 W J
R288	" -101	"	100 " "
R289	" -562	"	5.6 K " "
R290	" -561	"	560 " "
R291	" -472	"	4.7 K " "
R292	" -332	"	3.3 K " "
R293	" -182	"	1.8 K " "
R294	" -682	"	6.8 K " "
R295	" -102	"	1 K " "
R296	" -182	"	1.8 K " "
R297	" -561	"	560 " "
R298	" -271	"	270 " "
R299	SCV0047-501	VR	500
R300	QRD167J-271	CR	270 1/6 W J
R301	" -821	"	820 " "
R302	" -222	"	2.2 K " "
R303	" -222	"	2.2 K " "
R304	" -103	"	10 K " "
R305	" -393	"	39 K " "
R306	" -272	"	2.7 K " "
R307	" -153	"	15 K " "
R308	" -333	"	33 K " "
R309	" -272	"	2.7 K " "
R310	" -153	"	15 K " "
R311	" -333	"	33 K " "
R312	" -682	"	6.8 K " "
R313	" -561	"	560 " "
R314	" -561	"	560 " "
R315	" -562	"	5.6 K " "
R316	" -562	"	5.6 K " "
R317	GC31868-152	MFR	1.5 K 1/4 W F
R318	" -152	"	1.5 K " "
R319	QRD167J-101	CR	100 1/6 W J
R320	" -101	"	100 " "
R321	" -682	"	6.8 K " "
R322	" -561	"	560 " "
R323	" -472	"	4.7 K " "
R324	" -332	"	3.3 K " "
R325	" -182	"	1.8 K " "

Symbol No.	Part No.	Part Name	Description
R326	QRD167J-682	CR	6.8 K 1/6 W J
R327	" -102	"	1 K " "
R328	" -182	"	1.8 K " "
R329	" -561	"	560 " "
R330	" -271	"	270 " "
R331	SCV0047-501	VR	500
R332	QRD167J-271	CR	270 1/6 W J
R333	SCV0047-501	VR	500
R334	QRD167J-561	CR	560 1/6 W J
R335	" -102	"	1 K " "
R336	" -472	"	4.7 K " "
R337	" -472	"	4.7 K " "
R338	" -103	"	10 K " "
R339	" -223	"	22 K " "
R340	" -152	"	1.5 K " "
R341	" -152	"	1.5 K " "
R342	–	–	
R343	QRD167J-473	CR	47 K 1/6 W J
R344	" -103	"	10 K " "
R345	" -333	"	33 K " "
R346	" -102	"	1 K " "
R347	" -272	"	2.7 K " "
R348	" -331	"	330 " "
R349	" -221	"	220 " "
R350	" -103	"	10 K " "
R351	" -333	"	33 K " "
R352	" -472	"	4.7 K " "
R353	" -103	"	10 K " "
R354	" -393	"	39 K " "
R355	" -102	"	1 K " "
R356	" -472	"	4.7 K " "
R357	" -331	"	330 " "
R358	" -102	"	1 K " "
R359	" -472	"	4.7 K " "
R360	" -331	"	330 " "
R361	" -121	"	120 " "
R362	" -100	"	10 " "
R363	" -470	"	47 " "
R364	" -822	"	8.2 K " "
R365	" -822	"	8.2 K " "
R366	" -331	"	330 " "
R367	" -392	"	3.9 K " "
R368	SCV0046-103	VR	10 K
R369	QRD167J-104	CR	100 K 1/6 W J
R370	" -223	"	22 K " "
R371	" -472	"	4.7 K " "
R372	" -122	"	1.2 K " "
R373	" -152	"	1.5 K " "
R374	" -473	"	47 K " "
R375	" -332	"	3.3 K " "
R376	" -222	"	2.2 K " "
R377	" -222	"	2.2 K " "
R378	" -222	"	2.2 K " "
C 1	QFM31HK-102	MY Cap	0.001 50 V
C 2	QCS31HJ-101	C Cap	100 P "
C 3	QFM31HK-103	MY Cap	0.01 "
C 4	" -103	"	0.01 "
C 5	QET41ER-106	E Cap	10 25 V
C 6	QET61EM-475	"	47 "
C 7	QCS31HJ-101	C Cap	100 P 50 V
C 8	" -221	"	220 P "
C 9	QFM31HK-103	MY Cap	0.01 "

Symbol No.	Part No.	Part Name	Description
C10	QFM31HK-103	MY Cap	0.01 50 V
C11	" -153	"	0.015 "
C12	" -153	"	0.015 "
C13	" -102	"	0.001 "
C14	" -103	"	0.01 "
C15	" -103	"	0.01 "
C16	QET61EM-106	E Cap	10 25 V
C17	" -106	"	10 "
C18	" -106	"	10 "
C19	QET41ER-476	"	47 "
C20	QET61EM-106	"	10 "
C21	" -106	"	10 "
C22	QEE41CM-226	T Cap	22 16 V
C23	QFM31HK-104	MY Cap	0.1 50 V
C24	" -153	"	0.015 "
C25	QEE41VM-105	T Cap	1 35 V
C26	" -105	"	1 "
C27	QET41AR-476	E Cap	47 10 V
C28	QET61EM-475	"	4.7 25 V
C29	QFM31HK-333	MY Cap	0.033 "
C30	" -333	"	0.033 "
C31	QET61AM-107	E Cap	100 10 V
C32	QEE41EM-225	T Cap	2.2 25 V
C33	" -225	"	2.2 "
C34	" -475	"	4.7 "
C35	" -475	"	4.7 "
C36	QFM31HK-104	MY Cap	0.1 50 V
C37	QEE41EM-475	T Cap	4.7 25 V
C38	" -475	"	4.7 "
C39	QET41AR-476	E Cap	47 10 V
C40	QET61AM-476	"	47 "
C41	" -476	"	47 "
C42	" -107	"	100 "
C43	" -476	"	47 "
C44	QFM31HK-222	MY Cap	0.0022 50 V
C45	QET61AM-476	E Cap	47 10 V
C46	QEE41CM-226	T Cap	22 16 V
C47	QET61EM-106	E Cap	10 25 V
C48	QCS31HJ-101	C Cap	100 P 50 V
C49	QET41ER-106	E Cap	10 25 V
C50	QET61EM-106	"	10 "
C51	" -106	"	10 "
C52	" -476	"	47 "
C53	" -476	"	47 "
C54	" -476	"	47 "
C55	QEE41VM-105	T Cap	1 35 V
C56	QET61EM-476	"	47 25 V
C57	" -106	"	10 "
C58	QCS31HJ-680	C Cap	68 P 50 V
C59	QET61EM-106	E Cap	10 25 V
C60	QCS31HJ-680	C Cap	68 P 50 V
C61	" -101	"	100 P "
C62	QFM31HK-222	MY Cap	0.0022 "
C63	" -222	"	0.0022 "
C64	QET61EM-476	E Cap	47 25 V
C65	" -476	"	47 "
C66	" -476	"	47 "
C67	" -476	"	47 "
C68	" -476	"	47 "
C69	" -106	"	10 "
C70	" -106	"	10 "
C71	QET41ER-106	"	10 "
C72	QET61EM-106	"	10 "
C73	" -106	"	10 "
C74	" -106	"	10 "

Symbol No.	Part No.	Part Name	Description
C75	QET61EM-106	E Cap	10 25 V
C76	" -106	"	10 "
C77	QET61AM-227	"	220 10 V
C78	QET41ER-476	"	470 "
C79	QET61AM-476	"	470 "
C80	" -106	"	10 "
C81	QET41ER-106	"	10 25 V
C82	QET61EM-106	"	10 "
C83	" -106	"	10 "
C84	" -106	"	10 "
C85	" -106	"	10 "
C86	" -106	"	10 "
C87	" -106	"	10 "
C88	" -476	"	47 "
C89	" -476	"	47 "
C90	" -106	"	10 "
C91	QET61AM-476	"	47 10 V
C92	QET61EM-476	"	47 25 V
C93	" -476	"	47 "
C94	" -106	"	10 "
C95	QEE41VM-105	T Cap	1 35 V
C96	QET61EM-476	E Cap	47 25 V
C97	QET61AM-476	"	47 10 V
C98	QCS31HJ-181	C Cap	180 P 50 V
C99	" -181	"	180 P "
C100	" -181	"	180 P "
C101	" -181	"	180 P "
C102	" -181	"	180 P "
C103	QFM31HK-104	MY Cap	0.1 "
C104	QCS31HJ-680	C Cap	68 P "
C105	QET61AM-227	E Cap	220 10 V
C106	QET61EM-107	"	100 25 V
C107	QET61AM-227	"	220 10 V
C108	QET41ER-107	"	100 25 V
C109	QET61EM-107	"	100 "
C110	" -107	"	100 "
C111	" -107	"	100 "
C112	" -107	"	100 "
C113	" -107	"	100 "
C114	QET41ER-107	"	100 "
C115	QET61AM-107	"	100 10 V
C116	QET61EM-107	"	100 25 V
C117	QET61AM-107	"	100 10 V
C118	QCF31EZ-473	C Cap	47000 P 25 V
C119	" -473	"	47000 P "
C120	QET61EM-107	E Cap	100 "
C121	–	–	
C122	QET61EM-106	E Cap	1 25 V
C123	QFM31HK-103	MY Cap	0.01 50 V
C124	QCS31HJ-101	C Cap	100 P "
C125	" -101	"	100 P "
C126	QFM31HK-103	MY Cap	0.01 "
C127	" -103	"	0.01 "
C128	" -153	"	0.015 "
C129	" -103	"	0.01 "
C130	–	–	
C131	QET61AM-476	E Cap	47 10 V
C140	QCS31HJ-470	CE Cap	47 50 V
C141	" -220	"	22 P "

Symbol No.	Part No.	Part Name	Description
L 1	PU48530-120K	Peaking Coil	12 μH
L 2	" -270K	"	27 μH
L 3	" -270K	"	27 μH
L 4	" -270K	"	27 μH
L 5	" -270K	"	27 μH
L 6	" -220K	"	22 μH
L 7	" -220K	"	22 μH
L 8	PU48530-220K	Peaking Coil	22 μH
L 9	" -220K	"	22 μH
S 1	SCV0010-001	Switch	
PC-1	MCD-735	Photo Coupler	
PC-2	"	"	
TP1–TP20	SCV0025-102	Test Point	
TP-8	GC44813-001	"	
CN 3	SCV0304-00P	Connector	53 Pin

8.1.4 BC Board Ass'y ..... SCK1035-00A (NTSC) SCK1035-00B (PAL)

Symbol No.	Part No.	Part Name	Description
IC 1	TC4009UBP	I.C.	TOSHIBA
IC 2	AN612	"	MATSUSHITA
IC 3	AN614	"	"
IC 4	"	"	"
IC 5	TC4053BP	"	TOSHIBA
IC 6	TA78L012AP	"	" (12 V)
IC 7	NJM4560D	"	JRC
IC 8	"	"	"
IC 9	CA3083AE	"	RCA
IC10	MC1496P	"	MOTOROLA
IC11	"	"	"
IC12	NJM4560D	"	JRC
IC13	"	"	"
IC14	CA3083AE	"	RCA
IC15	MC1496P	"	MOTOROLA
IC16	"	"	"
IC17	AN612	"	MATSUSHITA
IC18	"	"	"
IC19	TC4053BP	"	TOSHIBA
IC20	TC4009UBP	"	"
IC21	TC4528BP	"	"
IC22	TC4011BP	"	"
IC23	TA78L005AP	"	" (5 V)
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	"	"	"
Q 3	"	"	"
Q 4	2SA564R	"	"
Q 5	"	"	"
Q 6	2SC828R	"	"
Q 7	"	"	"
Q 8	"	"	"
Q 9	"	"	"
Q10	2SA564R	"	"
Q11	"	"	"
Q12	2SC828R	"	"
Q13	"	"	"
Q14	"	"	"
Q15	2SC1509R	"	"
Q16	"	"	"
Q17	2SC828R	"	"
Q18	"	"	"
Q19	"	"	"
Q20	"	"	"
Q21	"	"	"
Q22	"	"	"
Q23	"	"	"
Q24	"	"	"
Q25	"	"	"
Q26	2SA564R	"	"
Q27	2SC828R	"	"
Q28	"	"	"
Q29	"	"	"
Q30	"	"	"
Q31	"	"	"
Q32	"	"	"
Q33	2SA564R	"	"
Q34	2SC828R	"	"
Q35	"	"	"
Q36	2SA564R	"	"
Q37	2SC828R	"	"
Q38	"	"	"
Q39	"	"	"

Symbol No.	Part No.	Part Name	Description
Q40	2SA564R	Transistor	MATSUSHITA
Q41	2SC828R	"	"
Q42	"	"	"
Q43	"	"	"
Q44	"	"	"
Q45	"	"	"
Q46	2SA564R	"	"
Q47	2SC828R	"	"
Q48	"	"	"
Q49	2SA564R	"	"
Q50	2SC828R	"	"
Q51	"	"	"
Q52	"	"	"
Q53	"	"	"
Q54	"	"	"
Q55	"	"	"
Q56	"	"	"
Q57	"	"	"
Q58	"	"	"
Q59	2SA564R	"	"
ZD 1	HZ16L2	Zener Diode	HITACHI (16 V)
ZD 2	"	"	" (16 V)
ZD 3	"	"	" (16 V)
D 1	MA165	Silicon Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	OA91	Diode	"
D 6	"	"	"
D 7	"	"	"
R 1	QRD167J-153	CR	15 K 1/6 W J
R 2	" -103	"	10 K " "
R 3	" -222	"	2.2 K " "
R 4	" -104	"	100 K " "
R 5	" -103	"	10 K " "
R 6	" -222	"	2.2 K " "
R 7	" -223	"	22 K " "
R 8	" -223	"	22 K " "
R 9	" -153	"	15 K " "
R10	" -393	"	39 K " "
R11	SCV0047-501	VR	500
R12	QRD167J-222	CR	2.2 K 1/6 W J
R13	" -152	"	1.5 K " "
R14	SCV0047-203	VR	20 K
R15	QRD167J-222	CR	2.2 K 1/6 W J
R16	GC31868-824	MFR	820 K 1/4 W F
R17	QRD167J-183	CR	18 K 1/6 W J
R18	" -102	"	1 K " "
R19	" -152	"	1.5 K " "
R20	SCV0047-501	VR	500
R21	QRD167J-153	CR	15 K 1/6 W J
R22	" -152	"	1.5 K " "
R23	" -102	"	1 K " "
R24	" -183	"	18 K " "
R25	" -102	"	1 K " "
R26	" -152	"	1.5 K " "
R27	" -152	"	1.5 K " "
R28	" -273	"	27 K " "

Symbol No.	Part No.	Part Name	Description
R29	QRD167J-562	CR	5.6 K 1/6 W J
R30	" -222	"	2.2 K " "
R31	" -821	"	820 " "
R32	" -681	"	680 " "
R33	" -273	"	27 K " "
R34	" -822	"	8.2 K " "
R35	" -473	"	47 K " "
R36	" -273	"	27 K " "
R37	" -273	"	27 K " "
R38	" -222	"	2.2 K " "
R39	GC31868-680	MFR	68 1/4 W F
R40	QRD167J-331	CR	330 1/6 W J
R41	" -152	"	1.5 K " "
R42	GC31868-680	MFR	68 1/4 W F
R43	QRD167J-332	CR	3.3 K 1/6 W J
R44	" -104	"	100 K " "
R45	SCV0047-203	VR	20 K
R46	" -502	"	5 K
R47	QRD167J-123	CR	12 K 1/6 W J
R48	" -123	"	12 K " "
R49	" -102	"	1 K " "
R50	" -104	"	100 K " "
R51	" -750	"	75 " "
R52	" -102	"	1 K " "
R53	" -104	"	100 K " "
R54	" -102	"	1 K " "
R55	" -102	"	1 K " "
R56	" -332	"	3.3 K " "
R57	" -473	"	47 K " "
R58	" -472	"	4.7 K " "
R59	" -750	"	75 " "
R60	" -750	"	75 " "
R61	" -102	"	1 K " "
R62	" -750	"	75 " "
R63	" -102	"	1 K " "
R64	" -152	"	1.5 K " "
R65	" -222	"	2.2 K " "
R66	" -273	"	27 K " "
R67	" -271	"	270 " "
R68	" -221	"	220 " "
R69	" -273	"	27 K " "
R70	" -681	"	680 " "
R71	" -102	"	1 K
R72	SCV0047-102	VR	1 K
R73	QRD167J-101	CR	100 1/6 W J
R74	" -152	"	1.5 K " "
R75	" -102	"	1 K " "
R76	" -102	"	1 K " "
R77	" -561	"	560 " "
R78	" -561	"	560 " "
R79	" -152	"	1.5 K " "
R80	" -222	"	2.2 K " "
R81	" -183	"	18 K " "
R82	GC31868-824	MFR	820 K 1/4 W F
R83	QRD167J-102	CR	1 K 1/6 W J
R84	" -152	"	1.5 K " "
R85	SCV0047-501	VR	500
R86	QRD167J-152	CR	1.5 K 1/6 W J
R87	" -102	"	1 K " "
R88	" -183	"	18 K " "
R89	" -152	"	1.5 K " "
R90	" -682	"	6.8 K " "
R91	" -332	"	3.3 K " "
R92	" -104	"	100 K " "
R93	" -472	"	4.7 K " "

Symbol No.	Part No.	Part Name	Description
R94	SCV0047-502	VR	5 K
R95	—	—	
R96	SCV0047-202	VR	2 K
R97	QRD167J-222	CR	2.2 K 1/6 W J
R98	" -104	"	100 K " "
R99	" -103	"	10 K " "
R100	SCV0047-102	VR	1 K
R101	QRD167J-222	CR	2.2 K 1/6 W J
R102	" -272	"	2.7 K " "
R103	" -152	"	1.5 K " "
R104	" -332	"	3.3 K " "
R105	" -472	"	4.7 K " "
R106	" -272	"	2.7 K " "
R107	" -152	"	1.5 K " "
R108	" -104	"	100 K " "
R109	" -473	"	47 K " "
R110	" -273	"	27 K " "
R111	" -331	"	330 " "
R112	" -222	"	2.2 K " "
R113	" -152	"	1.5 K " "
R114	GC31868-101	MFR	100 1/4 W F
R115	QRD167J-750	CR	75 1/6 W J
R116	GC31868-101	MFR	100 1/4 W F
R117	QRD167J-102	CR	1 K 1/6 W J
R118	" -682	"	6.8 K " "
R119	" -123	"	12 K " "
R120	" -153	"	15 K " "
R121	" -153	"	15 K " "
R122	" -222	"	2.2 K " "
R123	" -153	"	15 K " "
R124	" -153	"	15 K " "
R125	" -123	"	12 K " "
R126	" -153	"	15 K " "
R127	" -153	"	15 K " "
R128	" -681	"	680 " "
R129	" -681	"	680 " "
R130	" -681	"	680 " "
R131	" -681	"	680 " "
R132	" -681	"	680 " "
R133	" -681	"	680 " "
R134	" -680	"	68 " "
R135	" -680	"	68 " "
R136	" -680	"	68 " "
R137	" -392	"	3.9 K " "
R138	" -102	"	1 K " "
R139	" -221	"	220 " "
R140	" -121	"	120 " "
R141	" -680	"	68 " "
R142	" -680	"	68 " "
R143	" -680	"	68 " "
R144	" -392	"	3.9 K " "
R145	" -471	"	470 " "
R146	" -221	"	220 " "
R147	" -271	"	270 " "
R148	" -332	"	3.3 K " "
R149	" -102	"	1 K " "
R150	" -821	"	820 " "
R151	" -392	"	3.9 K " "
R152	" -823	"	82 K " "
R153	" -682	"	6.8 K " "
R154	" -152	"	1.5 K " "
R155	" -470	"	47 " "
R156	" -153	"	15 K " "
R157	" -123	"	12 K " "
R158	" -561	"	560 " "

Symbol No.	Part No.	Part Name	Description
R159	QRD167J-561	CR	560 1/6 W J
R160	" -472	"	4.7 K " "
R161	" -561	"	560 " "
R162	" -392	"	3.9 K " "
R163	" -221	"	220 " "
R164	" -471	"	470 " "
R165	SCV0047-102	VR	1 K
R166	QRD167J-223	CR	22 K 1/6 W J
R167	" -103	"	10 K " "
R168	" -682	"	6.8 K " "
R169	" -102	" (NTSC)	1 K " "
	" -471	" (PAL)	470 " "
R170	" -103	" (NTSC)	10 K " "
	" -562	" (PAL)	5.6 K " "
R171	" -103	"	10 K " "
R172	" -104	"	100 K " "
R173	" -102	"	1 K " "
R174	" -123	"	12 K " "
R175	" -222	"	2.2 K " "
R176	" -153	"	15 K " "
R177	" -153	"	15 K " "
R178	" -123	"	12 K " "
R179	" -153	"	15 K " "
R180	" -153	"	15 K " "
R181	" -153	"	15 K " "
R182	" -153	"	15 K " "
R183	" -681	"	680 " "
R184	" -681	"	680 " "
R185	" -681	"	680 " "
R186	" -681	"	680 " "
R187	" -681	"	680 " "
R188	" -681	"	680 " "
R189	" -680	"	68 " "
R190	" -680	"	68 " "
R191	" -680	"	68 " "
R192	" -392	"	3.9 K " "
R193	" -102	"	1 K " "
R194	" -392	"	3.9 K " "
R195	" -121	"	120 " "
R196	" -680	"	68 " "
R197	" -680	"	68 " "
R198	" -680	"	68 " "
R199	" -221	"	220 " "
R200	" -471	"	470 " "
R201	" -221	"	220 " "
R202	" -271	"	270 " "
R203	" -332	"	3.3 K " "
R204	" -102	"	1 K " "
R205	" -821	"	820 " "
R206	" -392	"	3.9 K " "
R207	" -823	"	82 K " "
R208	" -152	"	1.5 K " "
R209	" -682	"	6.8 K " "
R210	" -470	"	47 " "
R211	" -153	"	15 K " "
R212	" -123	"	12 K " "
R213	" -472	"	4.7 K " "
R214	" -561	"	560 " "
R215	" -561	"	560 " "
R216	" -561	"	560 " "
R217	" -332	"	3.3 K " "
R218	" -392	"	3.9 K " "
R219	" -221	"	220 " "
R220	" -471	"	470 " "
R221	SCV0047-102	VR	1 K
R222	QRD167J-223	CR	22 K 1/6 W J
R223	" -103	"	10 K " "

Symbol No.	Part No.	Part Name	Description
R224	QRD167J-682	CR	6.8 K 1/6 W J
R225	" -471	" (NTSC)	470 " "
	" -221	" (PAL)	220 " "
R226	" -103	" (NTSC)	10 K " "
	" -562	" (PAL)	5.6 K " "
R227	" -104	"	100 K " "
R228	" -103	"	10 K " "
R229	" -473	"	47 K " "
R230	" -104	"	100 K " "
R231	" -102	"	1 K " "
R232	" -102	"	1 K " "
R233	" -153	"	15 K " "
R234	" -103	"	10 K " "
R235	" -681	"	680 " "
R236	SCV0047-501	VR	500
R237	QRD167J-681	CR	680 1/6 W J
R238	" -101	"	100 " "
R239	" -561	"	560 " "
R240	" -331	"	330 " "
R241	" -152	"	1.5 K " "
R242	" -272	"	2.7 K " "
R243	" -102	"	1 K " "
R244	" -152	"	1.5 K " "
R245	" -472	"	4.7 K " "
R246	" -332	"	3.3 K " "
R247	" -103	"	10 K " "
R248	" -152	"	1.5 K " "
R249	" -101	"	100 " "
R250	" -223	"	22 K " "
R251	" -273	"	27 K " "
R252	" -273	"	27 K " "
R253	" -222	"	2.2 K " "
R254	" -331	"	330 " "
R255	" -152	"	1.5 K " "
R256	GC31868-101	MFR	100 1/4 W F
R257	QRD161J-750	CR	75 1/6 W J
R258	GC31868-101	MFR	100 1/4 W F
R259	QRD167J-153	CR	15 K 1/6 W J
R260	" -273	"	27 K " "
R261	" -332	"	3.3 K " "
R262	" -101	"	100 " "
R300	QRD167J-273	CR	27 K 1/6 W J
C 1	QET61EM-476	E Cap	47 25 V
C 2	" -106	"	10 "
C 3	QCS31HJ-470	C Cap (NTSC)	47 P 50 V
C 4	" -101	" (NTSC)	100 P "
C 5	" -560	"	56 P " N
C 6	QFM31HK-104	MY Cap	0.1 "
C 7	QET61EM-476	E Cap	47 25 V
C 8	QEE41EM-105	T Cap	1 "
C 9	QET61EM-107	E Cap	100 "
C10	" -107	"	100 "
C11	QEE41EM-475	T Cap	4.7 "
C12	QFM31HK-333	MY Cap	0.033 50 V
C13	QET61EM-476	E Cap	47 25 V
C14	QFM31HK-102	MY Cap	0.001 50 V
C15	QCT25UJ-101	C Cap UJ	100 P " N
C16	" -220	"	22 P " "
C17	QFM31HK-333	MY Cap	0.033 "
C18	QET61EM-106	E Cap	10 25 V
C19	" -107	"	100 "
C20	" -476	"	47 "
C21	QET61AM-227	"	220 10 V
C22	QET61EM-476	"	47 25 V
C23	QFM31HK-333	MY Cap	0.033 50 V

Symbol No.	Part No.	Part Name	Description
C24	QCT25UJ-151	C Cap UJ	150 P 50 V N
C25	QFM31HK-333	MY Cap	0.033 "
C26	" -333	"	0.033 "
C27	" -333	"	0.033 "
C28	" -333	"	0.033 "
C29	" -333	"	0.033 "
C30	" -333	"	0.033 "
C31	QET61EM-476	E Cap	47 25 V
C32	QFM31HK-333	MY Cap	0.033 50 V
C33	" -333	"	0.033 "
C34	QEE41EM-105	T Cap	1 25 V
C35	QRT41AR-107	E Cap	100 "
C36	QET61EM-107	"	100 "
C37	QEE41EM-475	T Cap	4.7 "
C38	QFM31HK-333	MY Cap	0.033 50 V
C39	QET61EM-476	E Cap	47 25 V
C40	" -106	"	10 "
C41	" -106	"	10 "
C42	" -106	"	10 "
C43	" -106	"	10 "
C44	–	–	
C45	QET61EM-106	E Cap	10 25 V
C46	" -476	"	47 "
C47	" -476	"	47 "
C48	" -107	"	100 "
C49	QCS31HJ-120	C Cap	12 P 50 V N
C50	QFM31HK-103	MY Cap	0.01 "
C51	QET61EM-107	E Cap	100 25 V
C52	QFM31HK-333	MY Cap	0.033 50 V
C53	QET61EM-476	E Cap	47 25 V
C54	QCS31HJ-470	C Cap (PAL)	47 P 50 V
C55	QAT3001-010	TR Cap	300 P 250 V
C56	QCS31HJ-151	C Cap (PAL)	150 P 50 V
C57	QET61EM-476	E Cap	47 25 V
C58	QFM31HK-333	MY Cap	0.033 50 V
C59	QCS31HJ-121	C Cap	120 P "
C60	" -101	"	100 P "
C61	" -101	"	100 P "
C62	QFM31HK-153	MY Cap	0.015 "
C63	–	–	
C64	QCS31HJ-101	C Cap	100 P 50 V
C65	QFM31HK-103	MY Cap	0.01 "
C66	QCS31HJ-470	C Cap	47 P "
C67	QFM31HK-333	MY Cap	0.033 "
C68	" -333	"	0.033 "
C69	QET61EM-106	E Cap	10 25 V
C70	" -476	"	47 "
C71	" -107	"	100 "
C72	QCS31HJ-220	C Cap (NTSC)	22 P 50 V
C73	QFM31HK-103	MY Cap	0.01 "
C74	QET61EM-107	E Cap	100 25 V
C75	QFM31HK-333	MY Cap	0.033 50 V
C76	QET61EM-476	E Cap	47 25 V
C77	QCS31HJ-470	C Cap (PAL)	47 P 50 V
C78	QAT3001-010	TR Cap	300 P 250 V
C79	QCS31HJ-470	C Cap (PAL)	47 P 50 V
C80	QFM31HK-333	MY Cap	0.033 "
C81	QET61EM-476	E Cap	47 25 V
C82	QCS31HJ-121	C Cap	120 P 50 V
C83	" -101	"	100 P "
C84	QFM31HK-153	MY Cap	0.015 "
C85	" -333	"	0.033 "
C86	QCS31HJ-101	C Cap	100 P "
C87	QFM31HK-103	MY Cap	0.01 "
C88	QCS31HJ-470	C Cap	47 P "

Symbol No.	Part No.	Part Name	Description
C89	QFM31HK-333	MY Cap	0.033 50 V
C90	" -333	"	0.033 "
C91	QET61EM-106	E Cap	10 25 V
C92	" -476	"	47 "
C93	" -476	"	47 "
C94	" -107	"	100 "
C95	" -107	"	100 "
C96	QCS31HJ-101	C Cap (NTSC)	100 P 50 V
C97	QFM31HK-102	MY Cap	0.001 "
C98	QET61EM-476	E Cap	47 25 V
C99	" -106	"	10 "
C100	" -106	"	10 "
C101	" -106	"	10 "
C102	" -476	"	47 "
C103	QCS31HJ-271	C Cap	27 P 50 V
C104	" -221	"	220 P "
C105	QET61EM-476	E Cap	47 25 V
C106	" -107	"	100 "
C107	QFM31HK-333	MY Cap	0.033 50 V
C108	QET61EM-476	E Cap	47 25 V
C109	" -476	"	47 "
C110	" -476	"	47 "
C111	" -107	"	100 25 V
C112	QCS31HJ-101	C Cap	100 P 50 V
C113	QET61EM-476	E Cap	47 25 V
C114	QCS31HJ-101	C Cap (PAL)	100 P 50 V
C115	" -101	" (")	100 P "
C116	QCF31EZ-103	" (")	0.01 25 V N
C117	" -103	" (")	0.01 " "
C118	" -103	" (")	0.01 " "
C119	" -103	" (")	0.01 " "
C120	QET61EM-106	E Cap	10 "
L 1	–	–	
L 2	PU48530-330K	Peaking Coil	33 μH
L 3	" -150K	"	15 μH
L 4	" -470K	"	47 μH
L 5	" -220K	"	22 μH
L 6	" -330K	"	33 μH
L 7	" -100K	"	10 μH
L 8	" -221K	"	220 μH
L 9	" -220K	"	22 μH
L10	" -330K	"	33 μH
L11	" -100K	"	10 μH
L12	" -221K	"	220 μH
L13	" -220K	"	22 μH
TP 1	SCV0025-102	Test Point	
TP 2	" -102	"	
TP 3	" -102	"	
	SCV0304-00P	Connector	53 Pin
	SCV0296-001	Card Pra.	

8.1.5 SG Board Ass'y ..... SCK1043-00A (NTSC)
(1) SG BOARD BASE SCK1043-00B (PAL)

Symbol No.	Part No.	Part Name	Description
IC 1	TC4009UBP	I.C.	TOSHIBA
IC 2	"	"	"
IC 3	TA78L012AP	"	" (12 V)
D 1	HZ16L2	Zener Diode	HITACHI (16 V)
D 2	"	"	" (16 V)
D 3	"	"	" (16 V)
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	2SA564R	"	"
Q 3	2SC828R	"	"
Q 4	2SA564R	"	"
Q 5	2SC828R	"	"
Q 6	2SA564R	"	"
Q 7	2SC828R	"	"
Q 8	2SA564R	"	"
Q 9	2SC828R	"	"
Q10	"	"	"
Q11	2SA564R	"	"
Q12	2SC828R	" (PAL)	"
Q13	2SA564R	" (")	"
Q14	2SC828R	"	"
Q15	"	"	"
Q16	"	"	"
Q17	"	"	"
Q18	"	"	"
Q19	"	"	"
Q20	"	"	"
Q21	"	"	"
Q22	"	"	"
R 1	QRD167J-473	CR	47 K 1/6 W J
R 2	" -331	"	330 " "
R 3	" -473	"	47 K " "
R 4	" -473	"	47 K " "
R 5	" -152	"	1.5 K " "
R 6	" -152	"	1.5 K " "
R 7	" -473	"	47 K " "
R 8	" -331	"	330 " "
R 9	" -473	"	47 K " "
R10	" -473	"	47 K " "
R11	" -152	"	1.5 K " "
R12	" -152	"	1.5 K " "
R13	" -473	"	47 K " "
R14	" -331	"	330 " "
R15	" -473	"	47 K " "
R16	" -473	"	47 K " "
R17	" -152	"	1.5 K " "
R18	" -152	"	1.5 K " "
R19	" -473	"	47 K " "
R20	" -331	"	330 " "
R21	" -473	"	47 K " "
R22	" -473	"	47 K " "
R23	" -152	"	1.5 K " "
R24	" -152	"	1.5 K " "
R25	" -473	"	47 K " "
R26	" -331	"	330 " "
R27	" -473	"	47 K " "
R28	" -222	"	2.2 K " "

Symbol No.	Part No.	Part Name	Description
R29	SCV0047-202	VR	2 K
R30	QRD167J-101	CR	100 1/6 W J
R31	" -473	"	47 K " "
R32	" -331	"	330 " "
R33	" -473	"	47 K " "
R34	" -152	"	1.5 K " "
R35	" -473	"	47 K " "
R36	" -152	"	1.5 K " "
R37	" -473	" (PAL)	47 K " "
R38	" -750	" (PAL)	75 " "
R39	" -473	" (PAL)	47 K " "
R40	" -152	" (PAL)	1.5 K " "
R41	" -473	" (PAL)	47 K " "
R42	" -152	" (PAL)	1.5 K " "
R43	–	–	
R44	SCV0047-103	VR	10 K
R45	QRD167J-223	CR	22 K 1/6 W J
R46	" -331	"	330 " "
R47	" -103	"	10 K " "
R48	GC31868-270	MFR	27 1/4 W F
R49	QRD167J-152	CR	1.5 K 1/6 W J
R50	GC31868-101	MFR	100 1/4 W F
R51	QRD167J-750	CR	75 1/6 W J
R52	–	–	
R53	SCV0047-103	VR	10 K
R54	QRD167J-223	CR	22 K 1/6 W J
R55	" -331	"	330 " "
R56	" -103	"	10 K " "
R57	GC31868-270	MFR	27 1/4 W F
R58	QRD167J-152	CR	1.5 K 1/6 W J
R59	GC31868-101	MFR	100 1/4 W F
R60	QRD167J-750	"	75 " "
R61	–	–	
R62	SCV0047-103	VR	10 K
R63	QRD167J-223	CR	22 K 1/6 W J
R64	" -331	"	330 " "
R65	" -103	"	10 K " "
R66	GC31868-270	MFR	27 1/4 W F
R67	QRD167J-152	CR	1.5 K 1/6 W J
R68	GC31868-270	MFR	27 1/4 W F
R69	QRD167J-750	CR	75 1/6 W J
C 1	QET61EM-107	E Cap	100 25 V
C 2	" -107	"	100 "
C 3	" -107	"	100 "
C 4	" -107	"	100 "
C 5	" -106	"	10 "
C 6	" -106	"	10 "
C 7	" -106	"	10 "
C 8	" -106	"	10 "
C 9	" -106	"	10 "
C10	" -106	"	10 "
C11	" -106	"	10 "
C12	" -106	"	10 "
C13	QCS31HJ-101	C.E. Cap	100 P 50 V
C14	QET61EM-107	E Cap	100 25 V
C15	QFM31HK-104	MY Cap	0.1 50 V
C16	QET61EM-106	E Cap	10 25 V
C17	QCS31HJ-101	C.E. Cap	100 P 50 V
C18	QET61EM-106	E Cap	10 25 V
C19	" -106	" (PAL)	10 50 V
C20	" -106	" (PAL)	10 "
C21	QET61EM-107	E Cap	100 25 V

Symbol No.	Part No.	Part Name	Description
C22	QFM31HK-104	MY Cap (NTSC)	0.1 50 V
C23	QET61EM-107	E Cap	100 25 V
C24	" -107	"	100 "
C25	" -107	"	100 "
C26	" -107	"	100 "
C27	QFM31HK-104	MY Cap	0.1 50 V
S 1	QSS6201-002	Slide Switch	
S 2	QSS2201-022	"	

(2) SG BOARD (NTSC)

Symbol No.	Part No.	Part Name	Description
X 1	2SA564R	Transistor	MATSUSHITA
X 2	2SC829C	"	"
X 3	"	"	"
X 4	"	"	"
X 5	"	"	"
X 6	"	"	"
X 7	"	"	"
X 8	–	–	
X 9	–	–	
X10	–	–	
X11	–	–	
X12	–	–	
X13	–	–	
X14	2SA564R	Transistor	MATSUSHITA
X15	2SC828R	"	"
X16	"	"	"
X17	"	"	"
X18	"	"	"
X19	"	"	"
X20	"	"	"
X21	"	"	"
X22	2SA564R	"	"
X23	2SC828R	"	"
X24	2SA564R	"	"
X25	2SC828R	"	"
X26	"	"	"
X27	2SA564R	"	"
X28	2SC828R	"	"
X29	"	"	"
X30	"	"	"
IC 1	TA78L008AP	I.C.	TOSHIBA (8 V)
IC 2	HA11247	"	HITACHI
IC 3	NJM4560D	"	JRC
IC 4	TC4098BP	"	TOSHIBA
IC 5	"	"	"
IC 6	HA11244	"	HITACHI
IC 7	TC4053BP	"	TOSHIBA
IC 8	HD44007A	"	HITACHI
IC 9	TC4528BP	"	TOSHIBA
IC10	TC4049UBP	"	"
IC11	TC4001BP	"	"
IC12	TC4050BP	"	"
IC13	TC4011BP	"	"
IC14	TC4528BP	"	"
IC15	TC4023BP	"	"
IC16	TC4015BP	"	"
IC17	"	"	"
D 1	–	–	
D 2	1S1555	Silicon Diode	HITACHI
D 3	"	"	"
D 4	"	"	"
D 5	1S2688G	Vari. Cap Diode	JRC
D 6	"	"	"
D 7	1S1555	Silicon Diode	HITACHI
D 8	OA91	Germanium Diode	MATSUSHITA
D 9	HZ7(2C)L	Zener Diode	7 V HITACHI
D10	1S1555	Silicon Diode	HITACHI

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Symbol No.	Part No.	Part Name	Description
R 1	QRD187J-750A	CR	75 1/8 W J
R 2	" -103A	"	10 K " "
R 3	" -473A	"	47 K " "
R 4	" -102A	"	1 K " "
R 5	" -333A	"	33 K " "
R 6	" -123A	"	12 K " "
R 7	" -102A	"	1 K " "
R 8	" -152A	"	1.5 K " "
R 9	" -273A	"	27 K " "
R10	" -102A	"	1 K " "
R11	" -102A	"	1 K " "
R12	GC31868-561	MFR	560 1/4 W F
R13	QRD187J-821A	CR	820 1/8 W J
R14	" -821A	"	820 " "
R15	GC31868-561	MFR	560 1/4 W F
R16	QRD187J-681A	CR	680 1/8 W J
R17	" -681A	"	680 " "
R18	SCV0046-202	VR	2 K
R19	QRD187J-393A	CR	39 K 1/8 W J
R20	" -123A	"	12 K " "
R21	" -222A	"	2.2 K " "
R22	" -123A	"	12 K " "
R23	" -103A	"	10 K " "
R24	" -822A	"	8.2 K " "
R25	" -472A	"	4.7 K " "
R26	" -472A	"	4.7 K " "
R27	" -680A	"	68 " "
R28	" -681A	"	680 " "
R29	" -223A	"	22 K " "
R30	" -473A	"	47 K " "
R31	" -821A	"	820 " "
R32	" -223A	"	22 K " "
R33	" -122A	"	1.2 K " "
R34	" -562A	"	5.6 K " "
R35	" -332A	"	3.3 K " "
R36	SCV0047-501	VR	500
R37	QRD187J-472A	CR	4.7 K 1/8 W J
R38	" -224A	"	220 K " "
R39	" -152A	"	1.5 K " "
R40	" -153A	"	15 K " "
R41	" -222A	"	2.2 K " "
R42	–	–	
R43	QRD187J-681A	CR	680 1/8 W J
R44	" -153A	"	15 K " "
R45	" -105A	"	1 M " "
R46	" -223A	"	22 K " "
R47	" -103A	"	10 K " "
R48	" -683A	"	68 K " "
R49	" -332A	"	3.3 K " "
R50	" -271A	"	270 " "
R51	" -561A	"	560 " "
R52	" -332A	"	3.3 K " "
R53	" -102A	"	1 K " "
R54	" -563A	"	56 K " "
R55	" -273A	"	27 K " "
R56	" -152A	"	1.5 K " "
R57	" -100A	"	10 " "
R58	" -223A	"	22 K " "
R59	" -152A	"	1.5 K " "
R60	" -333A	"	33 K " "
R61	" -152A	"	1.5 K " "
R62	" -152A	"	1.5 K " "
R63	" -473A	"	47 K " "

Symbol No.	Part No.	Part Name	Description
R64	QRD187J-273A	CR	27 K 1/8 W J
R65	" -562A	"	5.6 K " "
R66	" -682A	"	6.8 K " "
R67	" -392A	"	3.9 K " "
R68	" -392A	"	3.9 K " "
R69	" -472A	"	4.7 K " "
R70	" -332A	"	3.3 K " "
R71	" -332A	"	3.3 K " "
R72	" -682A	"	6.8 K " "
R73	" -682A	"	6.8 K " "
R74	" -103A	"	10 K " "
R75	" -103A	"	10 K " "
R76	" -683A	"	68 K " "
R77	GC31868-563	MFR	56 K 1/4 W F
R78	QRD187J-152A	CR	1.5 K 1/8 W J
R79	" -100A	"	10 " "
R80	GC31868-562	MFR	5.6 K 1/4 W F
R81	SCV0046-203	VR	20 K
R82	GC31868-823	MFR	82 K 1/4 W F
R83	QRD187J-472A	CR	4.7 K 1/8 W J
R84	" -561A	"	560 " "
R85	" -472A	"	4.7 K " "
R86	GC31868-822	MFR	8.2 K 1/4 W F
R87	QRD187J-562A	CR	5.6 K 1/8 W J
R88	" -823A	"	82 K " "
R89	" -223A	"	22 K " "
R90	" -104A	"	100 K " "
R91	" -105A	"	1 M " "
R92	SCV0047-203	VR	20 K
R93	GC31868-104	MFR	100 K 1/4 W F
R94	" -472	"	4.7 K " "
R95	" -392	"	3.9 K " "
R96	QRD187J-104A	CR	100 K 1/8 W J
R97	" -105A	"	1 M " "
R98	" -103A	"	10 K " "
R99	" -821A	"	820 " "
R100	" -272A	"	2.7 K " "
R101	GC31868-473	MFR	47 K 1/4 W F
R102	SCV0046-303	VR	30 K
R103	QRD187J-154A	CR	150 K 1/8 W J
R104	" -683A	"	68 K " "
R105	" -152A	"	1.5 K " "
R106	" -472A	"	4.7 K " "
R107	" -152A	"	1.5 K " "
R108	" -103A	"	10 K " "
R109	" -102A	"	1 K " "
R110	" -683A	"	68 K " "
R111	" -152A	"	1.5 K " "
R112	" -392A	"	3.9 K " "
R113	GC31868-473	MFR	47 K 1/4 W F
R114	SCV0047-303	VR	30 K
R115	QRD187J-683A	CR	68 K 1/8 W J
R116	" -822A	"	8.2 K " "
R117	" -101A	"	100 " "
R118	" -560A	"	56 " "
C 1	QET41ER-107	E Cap	100 25 V
C 2	" -107	"	100 "
C 3	" -107	"	100 "
C 4	QET41AR-476	E Cap	47 10 V
C 5	QCT05UJ-151	C Cap	150 P 50 V

Symbol No.	Part No.	Part Name	Description
C 6	QCT05UJ-220	C Cap	22 P 50 V
C 7	QFN41HK-103	MY Cap	0.01 "
C 8	QFF41HJ-101	MC Cap	100 P "
C 9	" -101	"	100 P "
C10	" -560	"	56 P "
C11	QFN41HK-103	MY Cap	0.01 "
C12	" -103	"	0.01 "
C13	" -103	"	0.01 "
C14	QET41AR-476	E Cap	47 10 V
C15	QFN41HK-104	M Cap	0.1 50 V
C16	QCT05UJ-101	C Cap (PAL)	100 P "
	" -151	" (NTSC)	150 P "
C17	QFN41HK-102	MY Cap	0.001 "
C18	" -103	"	0.01 "
C19	" -102	"	0.001 "
C20	QCT05UJ-180	C Cap	18 P "
C21	QET41ER-475	E Cap	4.7 25 V
C22	QFN41HK-473	MY Cap	0.047 50 V
C23	QET41ER-106	E Cap	10 25 V
C24	QET41AR-476	"	47 10 V
C25	" -476	"	47 "
C26	QCS11HJ-390	C Cap	39 P 50 V
C27	QFN41HK-104	MY Cap	0.1 "
C28	QEN41HA-105	NP Cap	1 "
C29	QCS11HJ-101	C Cap	100 P "
C30	QFF41HJ-151	MY Cap	150 P "
C31	QET41HR-105	E Cap	1 "
C32	QEN41HA-105	NP Cap	1 "
C33	" -105	"	1 "
C34	QET41AR-476	E Cap	47 10 V
C35	QCF11EZ-223	C Cap	0.022 50 V
C36	QFN41HK-472	MY Cap	0.0047 "
C37	" -102	"	0.001 "
C38	" -103	"	0.01 "
C39	QCF11HJ-223	C Cap	0.022 "
C40	QFN41HK-102	MY Cap	0.001 "
C41	QFF41HJ-181	MC Cap	180 P "
C42	QFN41HK-333	MY Cap	0.033 "
C43	QFF41HJ-181	MC Cap	180 P "
C44	QCS11HJ-120	C Cap	12 P "
C45	QFN41HK-333	MY Cap	0.033 "
C46	" -103	"	0.01 "
C47	QFF41HJ-561	MC Cap	560 P "
C48	QET41ER-475	E Cap	4.7 25 V
C49	" -475	"	47 "
C50	QFN41HK-103	MY Cap	0.01 50 V
C51	QEE41VM-474	T Cap	0.47 35 V
C52	QFN41HK-103	MY Cap	0.01 50 V
C53	QCS11HJ-181	C Cap	180 P "
C54	–	–	
C55	QCT05UJ-101	C Cap	100 P 50 V
C56	QCS11WK-820	"	82 P "
C57	QFN41HK-103	MY Cap	0.01 "
C58	" -103	"	0.01 "
C59	QCS11WK-681	C Cap	68 P "
C60	QAT3001-006	Trimmer Cap	50 P
C61	QCF11EZ-473	C Cap	0.047 50 V
C62	QET41AR-476	E Cap	47 10 V
C63	QCF11EZ-473	C Cap	0.047 50 V

Symbol No.	Part No.	Part Name	Description
C64	–	–	
C65	QCT05UJ-181	C Cap	180 P 50 V
C66	QFN41HK-333	MY Cap	0.033 "
C67	QCS11HJ-470	C Cap	47 P "
C68	QET41ER-106	E Cap	10 25 V
C69	QCS11HJ-221	C Cap	220 P 50 V
C70	" -561	"	560 P "
C71	QFF41HJ-240	MC Cap	24 P "
C72	QFN41HK-102	MY Cap	0.001 "
C73	" -102	"	0.001 "
C74	" -103	"	0.01 "
C75	" -103	"	0.01 "
C76	QCS11HJ-470	C Cap	47 P "
C77	QET41AR-227	E Cap	220 10 V
L 1	PU48530-120	Peaking Coil	12 μH
L 2	" -820	"	82 μH
L 3	" -220	"	22 μH
L 4	" -120	"	12 μH
L 5	" -820	"	82 μH
L 6	SCV0100-001	Coil	
L 7	PU48530-100	Peaking Coil	10 μH
L 8	A04096-1000	"	1 mH
	SC40338-001	Shield Case	
S 1	SCV0024-001	Slide Switch	
S 2	" -001	"	
X'TAL	GP32470-001	Crystal (NTSC)	14.31818 MHz
CN1	SCV0070-00P	Connector	22 Pins

(3) SG BOARD (PAL)

Symbol No.	Part No.	Part Name	Description
X 1	2SA564R	Transistor	MATSUSHITA
X 2	2SC828R	"	"
X 3	"	"	"
X 4	"	"	"
X 5	"	"	"
X 6	"	"	"
X 7	"	"	"
X 8	2SA564R	"	"
X 9	"	"	"
X10	2SC828R	"	"
X11	"	"	"
X12	"	"	"
X13	"	"	"
X14	"	"	"
X15	"	"	"
X16	"	"	"
X17	2SA564R	"	"
X18	2SC828R	"	"
X19	"	"	"
X20	"	"	"
X21	2SA564R	"	"
X22	2SC828R	"	"
X23	2SA564R	"	"
X24	2SC828R	"	"
X25	2SA564R	"	"
X26	2SC828R	"	"
X27	2SK163	"	"
X28	2SC828R	"	"
X29	"	"	"
X30	2SA564R	"	"
X31	2SC828R	"	"
X32	2SA719R	"	"
IC 1	TA78L008AP	Integrated Circuit	8 V REG. TOSHIBA
IC 2	HA11247	"	HITACHI
IC 3	NJM4560D	"	JRC
IC 4	DN819	"	MATSUSHITA
IC 5	"	"	"
IC 6	μPC324C	"	NEC
IC 7	AN614	"	MATSUSHITA
IC 8	"	"	"
IC 9	CD4053BE	"	RCA
IC10	HD44007	"	HITACHI
IC11	TC4528BP	"	TOSHIBA
IC12	"	"	"
IC13	"	"	"
IC14	HA11244	"	HITACHI
IC15	TC4528BP	"	TOSHIBA
IC16	TC4049BP	"	"
IC17	TC4010BP	"	"
IC18	TC4011BP	"	"
IC19	TC4001BP	"	"
D 1	1S1555	Silicon Diode	HITACHI
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	"	"	"
D 7	"	"	"

Symbol No.	Part No.	Part Name	Description
D 8	1S2688G	Vari. Cap Diode	HITACHI
D 9	0A91	Germanium Diode	MATSUSHITA
D10	HZ7(2C)L	Zener Diode	HITACHI
D11	1S1555	Silicon Diode	"
D12	SVC321A	Vari. Cap Diode	"
D13	1S2688G	"	"
R 1	QRD187J-750A	CR	75 1/8 W J
R 2	" -103A	"	10 K " "
R 3	" -473A	"	47 K " "
R 4	" -102A	"	1 K " "
R 5	" -333A	"	33 K " "
R 6	" -123A	"	12 K " "
R 7	" -102A	"	1 K " "
R 8	" -152A	"	1.5 K " "
R 9	" -223A	"	22 K " "
R10	" -273A	"	27 K " "
R11	" -102A	"	1 K " "
R12	" -102A	"	1 K " "
R13	GC31868-561	MFR	560 1/4 W F
R14	QRD187J-821A	CR	820 1/8 W J
R15	" -821A	"	820 " "
R16	GC31868-561	MFR	560 1/4 W F
R17	QRD187J-681A	CR	680 1/8 W J
R18	" -681A	"	680 " "
R19	SCV0046-202	VR	2 K
R20	QRD187J-393A	CR	39 K 1/8 W J
R21	" -123A	"	12 K " "
R22	" -222A	"	2.2 K " "
R23	" -122A	"	1.2 K " "
R24	" -123A	"	12 K " "
R25	" -103A	"	10 K " "
R26	" -822A	"	8.2 K " "
R27	" -472A	"	4.7 K " "
R28	" -472A	"	4.7 K " "
R29	" -152A	"	1.5 K " "
R30	" -680A	"	68 " "
R31	" -152A	"	1.5 K " "
R32	" -332A	"	3.3 K " "
R33	" -473A	"	4.7 K " "
R34	" -223A	"	22 K " "
R35	" -821A	"	820 " "
R36	" -562A	"	5.6 K " "
R37	" -332A	"	3.3 K " "
R38	SCV0047-102	VR	1 K
R39	QRD187J-472A	CR	4.7 K 1/8 W J
R40	" -224A	"	220 K " "
R41	" -271A	"	270 " "
R42	" -561A	"	560 " "
R43	" -222A	"	2.2 K " "
R44	—	—	
R45	QRD187J-102A	CR	1 K 1/8 W J
R46	" -563A	"	56 K " "
R47	" -273A	"	27 K " "
R48	—	—	
R49	QRD187J-152A	CR	1.5 K 1/8 W J
R50	" -223A	"	22 K " "
R51	" -392A	"	3.9 K " "
R52	" -333A	"	33 K " "
R53	" -392A	"	3.9 K " "
R54	" -222A	"	2.2 K " "
R55	" -473A	"	47 K " "

Symbol No.	Part No.	Part Name	Description
R56	QRD187J-103A	CR	10 K 1/8 W J
R57	" -683A	"	68 K " "
R58	" -332A	"	3.3 K " "
R59	" -472A	"	4.7 K " "
R60	" -392A	"	3.9 K " "
R61	" -102A	"	1 K " "
R62	" -102A	"	1 K " "
R63	" -152A	"	1.5 K " "
R64	" -473A	"	47 K " "
R65	" -392A	"	3.9 K " "
R66	" -562A	"	5.6 K " "
R67	" -682A	"	6.8 K " "
R68	" -392A	"	3.9 K " "
R69	" -392A	"	3.9 K " "
R70	" -472A	"	4.7 K " "
R71	" -332A	"	3.3 K " "
R72	" -332A	"	3.3 K " "
R73	" -682A	"	6.8 K " "
R74	" -682A	"	6.8 K " "
R75	" -103A	"	10 K " "
R76	" -103A	"	10 K " "
R77	" -224A	"	220 K " "
R78	" -473A	"	47 K " "
R79	" -102A	"	1 K " "
R80	" -104A	"	100 K " "
R81	—	—	
R82	QRD187J-104A	"	100 K 1/8 W "
R83	" -184A	"	180 K " "
R84	" -104A	"	100 K " "
R85	" -224A	"	220 K " "
R86	" -104A	"	100 K " "
R87	" -224A	"	220 K " "
R88	" -103A	"	10 K " "
R89	" -103A	"	10 K " "
R90	" -332A	"	3.3 K " "
R91	" -222A	"	2.2 K " "
R92	" -102A	"	1 K " "
R93	" -272A	"	2.7 K " "
R94	" -272A	"	2.7 K " "
R95	" -103A	"	10 K " "
R96	" -272A	"	2.7 K " "
R97	" -272A	"	2.7 K " "
R98	" -562A	"	5.6 K " "
R99	" -102A	"	1 K " "
R100	" -102A	"	1 K " "
R101	" -471A	"	470 " "
R102	" -682A	"	6.8 K " "
R103	" -682A	"	6.8 K " "
R104	" -332A	"	3.3 K " "
R105	" -222A	"	2.2 K " "
R106	" -103A	"	10 K " "
R107	" -103A	"	10 K " "
R108	" -472A	"	4.7 K " "
R109	" -823A	"	82 K " "
R110	" -683A	"	68 K " "
R111	" -394A	"	390 K " "
R112	GC31868-472	MFR	4.7 K 1/4 W F
R113	" -392	"	3.9 K " "
R114	QRD187J-104A	CR	100 K 1/8 W J
R115	" -105A	"	1 M " "
R116	" -272A	"	2.7 K " "
R117	" -472A	"	4.7 K " "
R118	" -821A	"	820 " "

Symbol No.	Part No.	Part Name	Description
R119	QRD187J-105A	CR	1 M 1/8 W J
R120	" -333A	"	33 K " "
R121	" -104A	"	100 K " "
R122	" -104A	"	100 K " "
R123	" -563A	"	56 K " "
R124	GC31868-473	MFR	47 K 1/4 W F
R125	SCV0046-303	VR	30 K
R126	GC31868-562	MFR	5.6 K 1/4 W F
R127	" -562	"	5.6 K " "
R128	SCV0047-203	VR	20 K
R129	GC31868-823	MFR	82 K 1/4 W F
R130	SCV0047-203	VR	20 K
R131	QRD187J-473A	CR	47 K 1/8 W J
R132	" -152A	"	1.5 K " "
R133	—	—	
R134	QRD187J-472A	CR	4.7 K 1/8 W J
R135	" -561A	"	560 " "
R136	" -472A	"	4.7 K " "
R137	" -562A	"	5.6 K " "
R138	" -104A	"	100 K " "
R139	SCV0047-203	VR	20 K
R140	QRD187J-273A	CR	27 K 1/8 W J
R141	" -224A	"	220 K " "
R142	" -683A	"	68 K " "
R143	" -272A	"	2.7 K " "
R144	" -101A	"	100 " "
R145	" -683A	"	68 K " "
R146	" -152A	"	1.5 K " "
R147	" -103A	"	10 K " "
R148	" -152A	"	1.5 K " "
R149	" -102A	"	1 K " "
R150	" -102A	"	1 K " "
R151	" -222A	"	2.2 K " "
R152	" -154A	"	150 K " "
R153	" -224A	"	220 K " "
R154	" -332A	"	3.3 K " "
C 1	QET41ER-107	E Cap	100 25 V
C 2	" -107	"	100 "
C 3	" -107	"	100 "
C 4	QET41AR-476	E Cap	47 10 V
C 5	QCT05UJ-101	C Cap	100 P 50 V
C 6	" -220	"	22 P "
C 7	QFN41HK-103	MY Cap	0.01 "
C 8	QFF41HJ-820	FM Cap	82 P "
C 9	" -820	"	82 P "
C10	" -560	"	56 P "
C11	QFN41HK-103	MY Cap	0.01 "
C12	" -103	"	0.01 "
C13	" -103	"	0.01 "
C14	QET41AR-476	E Cap	47 10 V
C15	QFN41HK-104	MY Cap	0.1 50 V
C16	QCT05UJ-101	C Cap	100 P "
C17	QFN41HK-104	MY Cap	0.1 "
C18	" -102	"	0.001 "
C19	" -102	"	0.001 "
C20	" -103	"	0.01 "
C21	QCT05UJ-390	C Cap	39 P "
C22	QET41ER-475	E Cap	4.7 25 V
C23	QFN41HK-473	MY Cap	0.047 50 V
C24	QET41ER-106	E Cap	10 25 V
C25	QCF11EZ-223	C Cap	0.022 50 V
C26	QET41AR-476	E Cap	47 10 V

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Symbol No.	Part No.	Part Name	Description
C27	QET41AR-476	E Cap	47 10 V
C28	QCS11HJ-270	C Cap	27 P 50 V
C29	QEN41HA-105	NP Cap	1 "
C30	QCT05UJ-101	C Cap	100 P "
C31	QFF41HJ-151	FM Cap	150 P "
C32	QET41HR-105	E Cap	1 "
C33	QET41ER-106	"	10 25 V
C34	QCT05UJ-390	C Cap	39 P 50 V
C35	" -150	"	15 P "
C36	QEN41HA-105	NP Cap	1 "
C37	" -105	"	1 "
C38	QCF11EZ-223	C Cap	0.022 "
C39	QFN41HK-472	MY Cap	0.0047 "
C40	QFN41HK-102	MY Cap	0.001 "
C41	" -103	"	0.01 "
C42	" -104	"	0.1 "
C43	" -683	"	0.068 "
C44	" -683	"	0.068 "
C45	" -683	"	0.068 "
C46	—	—	
C47	QCT05UJ-330	C Cap	33 P 50 V
C48	QFN41HK-103	MY Cap	0.01 "
C49	" -103	"	0.01 "
C50	QET41AR-476	E Cap	47 10 V
C51	" -476	"	47 "
C52	" -476	"	47 "
C53	QFN41HK-103	MY Cap	0.01 50 V
C54	QET41AR-476	E Cap	47 10 V
C55	" -476	"	47 "
C56	QFN41HK-103	MY Cap	0.01 50 V
C57	" -103	"	0.01 "
C58	" -103	"	0.01 "
C59	QCT05UJ-101	C Cap	100 P "
C60	QFN41HK-103	MY Cap	0.01 "
C61	" -103	"	0.01 "
C62	" -103	"	0.01 "
C63	" -102	"	0.001 "
C64	" -102	"	0.001 "
C65	" -103	"	0.01 "
C66	QCT05UJ-150	C Cap	15 P
C67	QAT3001-002	Trimmer Cap	20 P
C68	QCS11HJ-181	C Cap	180P 50 V
C69	QCT05UJ-151	"	150 P "
C70	—	—	
C71	QAT3001-002	Trimmer Cap	20 P
C72	—	—	
C73	QCT05UJ-101	C Cap	100 P 50 V
C74	" -181	"	180 P "
C75	" -470	"	47 P "
C76	—	—	
C77	QCF11EZ-473	C Cap	0.047 50 V
C78	QET41AR-476	E Cap	47 10 V
C79	QFN41HK-102	MY Cap	0.001 50 V
C80	QCT05UJ-271	C Cap	270 P "
C81	QFF41HJ-221	FM Cap	220 P "
C82	" -221	"	220 P "
C83	QCT05UJ-270	C Cap	27 P "
C84	QFN41HK-473	MY Cap	0.047 "
C85	" -103	"	0.01 "
C86	" -103	"	0.01 "
C87	" -333	"	0.033 "
C88	" -333	"	0.033 "
C89	QFF41HJ-181	FM Cap	180 P "

Symbol No.	Part No.	Part Name	Description
C90	QET41ER-475	E Cap	4.7 25 V
C91	" -475	"	47 "
C92	QFN41HK-102	MY Cap	0.001 50 V
C93	" -333	"	0.033 "
C94	" -102	"	0.001 "
C95	QCT05UJ-331	C Cap	330 P "
C96	QFN41HK-103	MY Cap	0.01 "
C97	" -103	"	0.01 "
C98	QCT05UJ-470	C Cap	47 P "
C99	QET41ER-106	E Cap	10 25 V
C100	QCT05UJ-221	C Cap	220 P 50 V
C101	QCF11EZ-223	"	0.022 "
C102	QET41AR-476	E Cap	47 10 V
C103	" -476	"	47 "
C104	QFN41HK-103	MY Cap	0.01 50 V
C105	QCF11EZ-473	C Cap	0.047 "
C106	—	—	
C107	QCT05UJ-101	C Cap	100 P 50 V
L 1	PU48530-120K	Peaking Coil	12 μH
L 2	" -560K	"	56 μH
L 3	" -220K	"	22 μH
L 4	" -120K	"	12 μH
L 5	" -330K	"	33 μH
L 6	" -120K	"	12 μH
L 7	—	—	
L 8	SCV0100-001	Choke Coil	
L 9	A04096-10	Peaking Coil	10 μH
L10	" -1000	"	1 mH
X-TAL 1	A75990	Crystal	
X-TAL 2	SCV0179-001	"	
SW 1	SCV0024-001	Slide Switch	
CN	SCV0070-00P	Connector	22 pins

8.1.6 PS Board Ass'y SCK2023-00A

Symbol No.	Part No.	Part Name	Description
⚠ IC 1	M5230L	I.C.	MITSUBISHI
⚠ IC 2	HA17805P	"	HITACHI
⚠ IC 3	TA7089P	"	TOSHIBA
IC 4	HA17812P	"	HITACHI
⚠ IC 5	TA78L005AP	"	TOSHIBA
⚠ Q 1	2SB856C	Transistor	MATSUSHITA
⚠ Q 2	2SC1061B	"	HITACHI
⚠ Q 3	"	"	"
Q 4	2SA564R	"	MATSUSHITA
Q 5	2SC828R	"	"
D 1	SIB01-02	Silicon Diode	FUJI ELECTRIC
D 2	—	—	
⚠ D 3	S4VB20	Silicon Diode	SHINDENGEN
⚠ D 4	"	"	"
⚠ D 5	ERC81-004	"	"
⚠ D 6	"	"	"
⚠ D 7	"	"	"
⚠ D 8	"	"	"
R 1	GC31868-331	MFR	330 1/4 W F
R 2	" -331	"	330 " "
R 3	QRX029J-R68	"	0.68 2 W J
R 4	GC31868-101	"	100 1/4 W F
R 5	QRX029J-R68	"	0.68 2 W J
R 6	GC31868-101	"	100 1/4 W F
R 7	" -822	"	8.2 K " "
R 8	SCV0047-102	VR	1 K
R 9	GC31868-182	MFR	1.8 K 1/4 W F
R10	" -153	"	15 K " "
R11	" -153	"	15 K " "
R12	" -151	"	150 " "
R13	QRX029J-R47	"	0.47 2 W J
R14	GC31868-123	"	12 K 1/4 W F
R15	SCV0047-202	VR	2 K
R16	GC31868-332	MFR	3.3 K 1/4 W F
R17	GC31868-470	"	47 1/4 W F
⚠ C 1	QEV71VR-478	E Cap	4700 35 V
⚠ C 2	QEV71ER-478	"	4700 25 V
⚠ C 3	" -478	"	4700 "
C 4	QET61HM-105Z	"	1 50 V
C 5	QFN41HK-334	MY Cap	0.33 "
C 6	QET61HK-105Z	E Cap	1 "
C 7	QFN41HK-334	MY Cap	0.33 "
C 8	QEV71ER-478	E Cap	4700 25 V
C 9	QET61HM-105Z	"	1 50 V
C10	QET61CM-107Z	"	100 16 V
C11	" -107Z	"	100 "
C12	QFM31HK-104ZD	MY Cap	0.1 50 V
C13	QET41VR-107	E Cap	100 35 V
C14	QFM31HK-103ZD	MY Cap	0.01 50 V
C15	QET61EM-476Z	E Cap	47 25 V
C16	QFM31HK-104ZD	MY Cap	0.1 50 V
C17	" -104ZD	"	0.1 "
C18	" -104ZD	"	0.1 "
C19	" -104ZD	"	0.1 "

Symbol No.	Part No.	Part Name	Description
F 1	—	—	
⚠ F 2	QMF51U1-1R6	Fuse (NTSC)	1.6 A 125 V
⚠	QMF51A2-1R6	" (PAL)	T1.6 A 250 V
F 3	—	—	
⚠ F 4	QMF51U1-1R6	Fuse (NTSC)	1.6 A 125 V
⚠	QMF51A2-1R6	" (PAL)	T1.6 A 250 V
TP 1	SCV0025-102	Test Point	
TP 2	" -102	"	
TP 3	" -102	"	
TP 4	" -102	"	
⚠ CN13	SS31054-007	Card Fit S (7P)	
⚠ CN14	" -004	" (4P)	
⚠ CN15	" -005	" (5P)	
⚠ CN16	" -006	" (6P)	
⚠ CN17	SN3490-004	Pola Male Pin (4P)	
⚠ CN18	SN3490-003	" (3P)	

8.1.7 TL Board Ass'y SC83035-001

Symbol No.	Part No.	Part Name	Description
IC 1	TD62502P	I.C.	TOSHIBA
D 1	10D1	Silicon Diode	NIHON INTER
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	"	"	"
D 7	"	"	"
D 8	"	"	"
D 9	"	"	"
Q 1	2SC828R	Transistor	MATSUSHITA
R 1	QRD167J-103	CR	10 K 1/6 W J
R 2	" -103	"	10 K " "
Re 1	SJV0033	Relay	
Re 2	"	"	
Re 3	"	"	
Re 4	"	"	
Re 5	"	"	
Re 6	"	"	
Re 7	"	"	
Re 8	"	"	
Re 9	"	"	
CN 9	SS31054-009	Card Fit S	
CN10	" -006	"	
CN11	" -010	Connector	

8.1.8 IT Board Ass'y SCK2022-00A

Symbol No.	Part No.	Part Name	Description
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	"	"	"
Q 3	"	"	"
Q 4	"	"	"
Q 5	"	"	"
Q 6	"	"	"
D 1	RD24EB	Zener Diode	NEC (24 V)
D 2	"	"	" (")
R 1	QRD167J-102	CR	1 K 1/6 W J
R 2	" -102	"	1 K " "
R 3	" -100	"	10 " "
R 4	GC31868-331	MFR	330 " "
R 5	QRD167J-123	CR	12 K " "
R 6	" -472	"	4.7 K " "
R 7	" -331	"	330 " "
R 8	" -682	"	6.8 K " "
R 9	" -222	"	2.2 K " "
R10	" -101	"	100 " "
R11	SCV0290-001	VR	
R12	QRD167J-331	CR	330 1/6 W J
R13	" -331	"	330 " "
R14	" -682	"	6.8 K " "
R15	" -101	"	100 " "
R16	" -222	"	2.2 K " "
R17	SCV0290-001	VR	
R18	QRD167J-331	CR	330 1/6 W J
R19	" -331	"	330 " "
R20	" -682	"	6.8 K " "
R21	" -101	"	100 " "
R22	" -222	"	2.2 K " "
R23	SCV0290-001	VR	
R24	QRD167J-331	CR	330 1/6 W J
R25	QRD121J-151	CR	150 1/4 W F
R26	" -151	"	150 " "
R27	" -151	"	150 " "
C 1	QET41ER-107	E Cap	100 25 V
C 2	QET61EM-107Z	"	100 "
C 3	" -107Z	"	100 "
C 4	" -107Z	"	100 "
C 5	QET61CM-107Z	"	47 16 V
C 6	QET61AM-476Z	"	47 10 V
C 7	" -476Z	"	47 "
C 8	QET61CM-107Z	"	47 16 V
C 9	" -107Z	"	47 "
C10	QET61AM-476Z	"	47 10 V
C11	" -476Z	"	47 "
C12	QET41CR-477	"	470 16 V
C13	QET61AM-476Z	"	47 10 V
L 1	SCV0407-001	Choke Coil	
L 2	" -001	"	
19	SS30644-003	Post Header	
20	" -003	"	
21	" -003	"	
22	" -003	"	
23	SS31054-005	Card Fit S	

8.1.9 MB Board Ass'y SCK1045-00A

Symbol No.	Part No.	Part Name	Description
IC 1	TC4010BP	I.C.	TOSHIBA
IC 2	TC4042BP	"	"
IC 3	TC4051BP	"	"
IC 4	"	"	"
IC 5	TC4009UBP	"	"
IC 6	TC4011BP	"	"
IC 7	TC4053BP	"	"
IC 8	TC4011BP	"	"
IC 9	TC5018P	"	"
IC10	TC4009UBP	"	
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	2SA564R	"	"
Q 3	2SC828R	"	"
Q 4	2SA564R	"	
D 1	MA165	Silicon Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	"	"	"
D 7	"	"	"
D 8	"	"	"
D 9	"	"	"
D10	"	"	"
D11	"	"	"
D12	"	"	"
D13	"	"	"
D14	"	"	"
D15	"	"	"
D16	"	"	"
D17	"	"	"
D18	"	"	"
D19	"	"	"
D20	"	"	"
D21	"	"	"
D22	"	"	"
D23	"	"	"
D24	"	"	"
D25	"	"	"
D26	"	"	"
D27	"	"	"
D28	"	"	"
D29	"	"	"
D30	"	"	"
D31	"	"	"
D32	"	"	"
D33	"	"	"
D34	"	"	"
D35	"	"	"
D36	"	"	"
D37	"	"	"
D38	"	"	"
D39	"	"	"
D40	"	"	"
D41	"	"	"
D42	"	"	"
D43	"	"	"
D44	"	"	"
D45	"	"	"
D46	MA165	Silicon Diode	MATSUSHITA
D47	"	"	"
D48	"	"	"
D49	"	"	"
D50	"	"	"
D51	"	"	"
D52	"	"	"
D53	"	"	"
D54	"	"	"
D55	"	"	"
D56	"	"	"
D57	"	"	"
D58	–	–	
D59	–	–	
D60	–	–	
D61	–	–	
D62	–	–	
D63	–	–	
D64	–	–	
D65	–	–	
D66	–	–	
D67	MA165	Silicon Diode	MATSUSHITA
D68	"	"	"
D69	"	"	"
D70	"	"	"
D71	"	"	"
D72	"	"	"
D73	"	"	"
D74	"	"	"
D75	"	"	"
D76	"	"	"
D77	"	"	"
D78	"	"	"
R 1	QRD167J-473	CR	47 K 1/6 W J
R 2	" -473	"	47 K " "
R 3	" -473	"	47 K " "
R 4	" -473	"	47 K " "
R 5	" -473	"	47 K " "
R 6	" -473	"	47 K " "
R 7	" -473	"	47 K " "
R 8	" -473	"	47 K " "
R 9	" -473	"	47 K " "
R10	" -473	"	47 K " "
R11	" -473	"	47 K " "
R12	" -473	"	47 K " "
R13	" -102	"	1 K " "
R14	" -473	"	47 K " "
R15	" -272	"	2.7 K " "
R16	" -103	"	10 K " "
R17	" -473	"	47 K " "
R18	" -393	"	39 K " "
R19	" -332	"	3.3 K " "
R20	" -393	"	39 K " "
R21	" -332	"	3.3 K " "
R22	" -393	"	39 K " "
R23	" -332	"	3.3 K " "
R24	" -393	"	39 K " "
R25	" -332	"	3.3 K " "
R26	" -393	"	39 K " "
R27	" -332	"	3.3 K " "
R28	" -332	"	3.3 K " "
R29	" -102	"	1 K " "

Symbol No.	Part No.	Part Name	Description
R30	QRD167J-332	CR	3.3 K 1/6 W J
R31	" -102	"	1 K " "
R32	" -332	"	3.3 K " "
R33	" -102	"	1 K " "
R34	" -332	"	3.3 K " "
R35	" -102	"	1 K " "
R36	" -332	"	3.3 K " "
R37	" -102	"	1 K " "
R38	" -101	"	100 " "
R39	" -103	"	10 K " "
R40	" -101	"	100 " "
R41	–	–	
R42	" -473	"	47 K 1/6 W J
R43	" -272	"	2.7 K " "
R44	" -473	"	47 K " "
R45	" -272	"	2.7 K " "
R46	" -473	"	47 K " "
R47	" -473	"	47 K " "
R48	" -473	"	47 K " "
R49	" -473	"	47 K " "
R50	" -473	"	47 K " "
R51	" -473	"	47 K " "
R52	" -103	"	10 K " "
R53	" -272	"	2.7 K " "
R54	" -473	"	47 K " "
R55	" -103	"	10 K " "
R56	" -272	"	2.7 K " "
R57	" -473	"	47 K " "
R58	" -103	"	10 K " "
R59	" -272	"	2.7 K " "
R60	" -473	"	47 K " "
R61	" -103	"	10 K " "
R62	" -272	"	2.7 K " "
R63	" -473	"	47 K " "
R64	" -103	"	10 K " "
R65	" -272	"	2.7 K " "
R66	" -102	"	1 K " "
R67	" -102	"	1 K " "
R68	" -102	"	1 K " "
R69	" -102	"	1 K " "
R70	" -102	"	1 K " "
R71	SC31868-750	MFR	75 1/4 W F
R72	" -750	"	75 " "
R73	" -750	"	75 " "
R74	QRD167J-104	CR	100 K 1/6 W J
R75	" -103	"	10 K " "
R76	" -473	"	47 K " "
C 1	QCS31HJ-101	C Cap	100 P 50 V
C 2	" -101	"	100 P "
C 3	" -101	"	100 P "
C 4	" -221	"	220 P "
C 5	" -101	"	100 P "
C 6	" -101	"	100 P "
C 7	" -101	"	100 P "
C 8	" -101	"	100 P "
C 9	QET61EM-107	E Cap	100 25 V
C10	" -107	"	100 "
C11	" -107	"	100 "
C12	" -107	"	100 "
C13	" -107	"	100 "
C14	" -107	"	100 "
C15	" -107	"	100 "

Symbol No.	Part No.	Part Name	Description
C16	QET61EM-107	E Cap	100 25 V
C17	" -107	"	100 "
C18	" -107	"	100 "
C19	" -107	"	100 "
C20	" -107	"	100 "
C21	" -107	"	100 "
C22	" -107	"	100 "
C23	–	–	
C24	QCS31HJ-221	C Cap	100 P 50 V
	SCV0025-102	Test Point	(TP 1, TP 2)
CN 1	SCV0305-00S	Connector	53 P
CN 2	" -00S	"	53 P
CN 3	" -00S	"	53 P
CN 4	" -00S	"	53 P
CN 5	" -00S	"	53 P
CN 6	SS31002-050	Plug Header	50 P
CN 7	" -026	"	
CN 8	SS31054-009	Card Fit S	
CN 9	–	–	
CN10	–	–	
CN11	–	–	
CN12	SS31054-007	Card Fit S	
CN13	–	–	
CN14	–	–	
CN15	–	–	
CN16	–	–	
CN17	–	–	
CN18	–	–	
CN19	–	–	
CN20	–	–	
CN21	–	–	
CN22	–	–	
CN23	–	–	
CN24	SS31054-004	Card Fit	
CN25	SS30644-003	Post Header	
CN26	" -002	"	
CN27	" -002	"	
CN28	SS30644-003	Post Header	
CN29	" -003	"	
CN30	" -010	"	
CN31	" -006	"	
CN32	" -002	"	
CN33	" -008	"	
CN34	" -008	"	
CN35	" -002	"	
CN36	" -002	"	
CN37	" -004	"	
CN38	" -002	"	
CN39	" -010	"	
CN40	" -006	"	
CN41	" -006	"	

8.2 CONTROL UNIT

8.2.1 LB Board Ass'y SCK1039-00A

Symbol No.	Part No.	Part Name	Description
IC 1	TC4042BP	I.C.	TOSHIBA
IC 2	"	"	"
IC 3	"	"	"
IC 4	"	"	"
IC 5	"	"	"
IC 6	"	"	"
IC 7	TC4051BP	"	"
IC 8	"	"	"
IC 9	"	"	"
IC10	"	"	"
IC11	"	"	"
IC12	TC5018P	"	"
IC13	TC4009UBP	"	"
IC14	TC4053BP	"	"
IC15	"	"	"
IC16	TC4009UBP	"	"
IC17	TC4011BP	"	"
IC18	"	"	"
IC19	TC4051BP	"	"
IC20	"	"	"
IC21	"	"	"
IC22	"	"	"
IC23	TD62502P	"	"
IC24	TC4051BP	"	"
IC25	"	"	"
IC26	TC4053BP	"	"
IC27	"	"	"
IC28	TC4011BP	"	"
IC29	"	"	"
IC30	CA3240E	"	RCA
IC31	"	"	"
IC32	"	"	"
IC33	NJM4560D	"	JRC
IC34	"	"	"
IC35	"	"	"
IC36	"	"	"
IC37	"	"	"
IC38	TC4053BP	"	TOSHIBA
IC39	TC4009UBP	"	"
Q 1	2SC828R	Transistor	MATSUSHITA
Q 2	2SA564R	"	"
Q 3	2SC828R	"	"
Q 4	2SA564R	"	"
Q 5	2SC828R	"	"
Q 6	2SA564R	"	"
Q 7	2SC828R	"	"
Q 8	2SA564R	"	"
Q 9	"	"	"
Q10	2SC828R	"	"
D 1	MA165	Silicon Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	"	"	"
D 7	"	"	"
D 8	"	"	"
D 9	"	"	"
D10	"	"	"
D11	"	"	"

Symbol No.	Part No.	Part Name	Description
D12	MA165	Silicon Diode	MATSUSHITA S
D13	"	"	" "
D14	"	"	" "
D15	"	"	" "
D16	"	"	" "
D17	"	"	" "
D18	"	"	" "
D19	"	"	" "
D20	"	"	" "
D21	"	"	" "
D22	"	"	" "
D23	"	"	" "
D24	"	"	" "
D25	"	"	" "
D26	"	"	" "
D27	"	"	" "
D28	"	"	" "
D29	"	"	" "
D30	"	"	" "
D31	"	"	" "
D32	"	"	" "
D33	"	"	" "
D34	"	"	" "
D35	"	"	" "
D36	"	"	" "
D37	"	"	" "
D38	"	"	" "
D39	"	"	" "
D40	"	"	" "
D41	"	"	" "
D42	"	"	" "
D43	"	"	" "
D44	"	"	" "
D45	"	"	" "
D46	"	"	" "
D47	"	"	" "
D48	"	"	" "
D49	"	"	" "
D50	"	"	" "
D51	"	"	" "
D52	"	"	" "
D53	"	"	" "
D54	"	"	" "
D55	–	–	
D56	–	–	
D57	–	–	
D58	–	–	
D59	MA165	Silicon Diode	MATSUSHITA S
D60	"	"	" "
D61	"	"	" "
D62	"	"	" "
D63	"	"	" "
D64	"	"	" "
D65	"	"	" "
D66	"	"	" "
D67	"	"	" "
D68	"	"	" "
R 1	1S1555	Diode	
R 2	"	"	
R 3	"	"	
R 4	"	"	
R 5	"	"	

Symbol No.	Part No.	Part Name	Description
R 6	1S1555	Diode	
R 7	"	"	
R 8	"	"	
R 9	"	"	
R10	"	"	
R11	"	"	
R12	"	"	
R13	"	"	
R14	"	"	
R15	"	"	
R16	"	"	
R17	QRD167J-104	CR	100 K 1/6 W J
R18	" -102	"	1 K " "
R19	" -103	"	10 K " "
R20	" -474	"	470 K " "
R21	" -474	"	470 K " "
R22	" -474	"	470 K " "
R23	" -474	"	470 K " "
R24	" -474	"	470 K " "
R25	" -474	"	470 K " "
R26	" -474	"	470 K " "
R27	" -474	"	470 K " "
R28	" -473	"	47 K " "
R29	" -473	"	47 K " "
R30	" -473	"	47 K " "
R31	" -473	"	47 K " "
R32	" -474	"	470 K " "
R33	" -474	"	470 K " "
R34	" -474	"	470 K " "
R35	" -474	"	470 K " "
R36	" -474	"	470 K " "
R37	" -474	"	470 K " "
R38	" -474	"	470 K " "
R39	" -474	"	470 K " "
R40	" -474	"	470 K " "
R41	" -474	"	470 K " "
R42	" -474	"	470 K " "
R43	" -474	"	470 K " "
R44	" -474	"	470 K " "
R45	" -474	"	470 K " "
R46	1S1555	Diode	
R47	"	"	
R48	–	–	
R49	–	–	
R50	–	–	
R51	–	–	
R52	QRD167J-473	CR	47 K 1/6 W J
R53	" -103	"	10 K " "
R54	" -473	"	47 K " "
R55	" -103	"	10 K " "
R56	" -473	"	47 K " "
R57	" -103	"	10 K " "
R58	" -473	"	47 K " "
R59	" -103	"	10 K " "
R60	" -473	"	47 K " "
R61	" -103	"	10 K " "
R62	–	–	
R63	QRD167J-472	CR	4.7 K 1/6 W J
R64	–	–	
R65	QRD167J-472	CR	4.7 K 1/6 W J
R66	–	–	
R67	QRD167J-472	CR	4.7 K 1/6 W J
R68	" -473	"	47 K " "
R69	" -103	"	10 K " "
R70	–	–	

Symbol No.	Part No.	Part Name	Description
R71	QRD167J-472	CR	4.7 K 1/6 W J
R72	–	–	
R73	QRD167J-472	CR	4.7 K 1/6 W J
R74	–	–	
R75	QRD167J-472	CR	4.7 K 1/6 W J
R76	GC31868-331	MFR	330 1/4 W F
R77	" -331	"	330 " "
R78	" -331	"	330 " "
R79	" -331	"	330 " "
R80	QRD167J-473	CR	47 K 1/6 W J
R81	" -473	"	47 K " "
R82	" -103	"	10 K " "
R83	" -103	"	10 K " "
R84	" -103	"	10 K " "
R85	" -473	"	47 K " "
R86	" -473	"	47 K " "
R87	" -473	"	47 K " "
R88	" -473	"	47 K " "
R89	" -473	"	47 K " "
R90	" -473	"	47 K " "
R91	–	–	
R92	–	–	
R93	–	–	
R94	–	–	
R95	–	–	
R96	QRD167J-103	CR	10 K 1/6 W J
R97	" -272	"	2.7 K " "
R98	" -272	"	2.7 K " "
R99	" -272	"	2.7 K " "
R100	" -272	"	2.7 K " "
R101	" -272	"	2.7 K " "
R102	" -272	"	2.7 K " "
R103	" -102	"	1 K " "
R104	" -102	"	1 K " "
R105	" -102	"	1 K " "
R106	" -102	"	1 K " "
R107	" -102	"	1 K " "
R108	" -102	"	1 K " "
R109	" -102	"	1 K " "
R110	" -102	"	1 K " "
R111	" -104	"	100 K " "
R112	" -104	"	100 K " "
R113	" -104	"	100 K " "
R114	" -104	"	100 K " "
R115	" -104	"	100 K " "
R116	" -104	"	100 K " "
R117	" -104	"	100 K " "
R118	" -104	"	100 K " "
R119	" -473	"	47 K " "
R120	" -473	"	47 K " "
R121	" -473	"	47 K " "
R122	" -103	"	10 K " "
R123	" -473	"	47 K " "
R124	" -103	"	10 K " "
R125	" -473	"	47 K " "
R126	" -103	"	10 K " "
R127	" -473	"	47 K " "
R128	" -103	"	10 K " "
R129	" -473	"	47 K " "
R130	" -101	"	100 " "
R131	" -101	"	100 " "
R132	" -101	"	100 " "
R133	" -101	"	100 " "
R134	" -473	"	47 K " "
R135	" -473	"	47 K " "

Symbol No.	Part No.	Part Name	Description
R136	QRD167J-473	CR	47 K 1/6 W J
R137	" -473	"	47 K " "
R138	" -473	"	47 K " "
R139	" -473	"	47 K " "
R140	" -473	"	47 K " "
R141	" -473	"	47 K " "
R142	" -473	"	47 K " "
R143	" -473	"	47 K " "
R144	" -473	"	47 K " "
R145	" -473	"	47 K " "
R146	" -473	"	47 K " "
R147	" -473	"	47 K " "
R148	" -473	"	47 K " "
R149	" -393	"	39 K " "
R150	" -332	"	3.3 K " "
R151	" -332	"	3.3 K " "
R152	" -393	"	39 K " "
R153	" -332	"	3.3 K " "
R154	" -332	"	3.3 K " "
R155	" -222	"	2.2 K " "
R156	" -102	"	1 K " "
R157	" -153	"	15 K " "
R158	" -222	"	2.2 K " "
R159	" -472	"	4.7 K " "
R160	SCV0047-203	VR	20 K
R161	QRD167J-104	CR	10 K 1/6 W J
R162	SCV0047-203	VR	20 K
R163	QRD167J-223	CR	22 K 1/6 W J
R164	" -681	"	680 " "
R165	" -822	"	8.2 K " "
R166	" -681	"	680 " "
R167	" -332	"	3.3 K " "
R168	SCV0047-502	VR	5 K
R169	QRD167J-681	CR	680 1/6 W J
R170	" -822	"	8.2 K " "
R171	" -681	"	680 " "
R172	" -681	"	680 " "
R173	" -822	"	8.2 K " "
R174	" -681	"	680 " "
R175	" -103	"	10 K " "
R176	" -103	"	10 K " "
R177	" -332	"	3.3 K
R178	SCV0047-502	VR	5 K
R179	QRD167J-332	CR	3.3 K 1/6 W J
R180	SCV0047-103	VR	10 K
R181	" -502	"	5 K
R182	QRD167J-561	CR	560 1/6 W J
R183	" -103	"	10 K
R184	SCV0047-203	VR	20 K
R185	" -502	"	5 K
R186	QRD167J-332	CR	3.3 K 1/6 W J
R187	" -103	"	10 K " "
R188	SCV0047-502	VR	5 K
R189	" -502	"	5 K
R190	QRD167J-332	CR	3.3 K 1/6 W J
R191	" -103	"	10 K " "
R192	SCV0047-502	VR	5 K
R193	QRD167J-103	CR	10 K 1/6 W J
R194	SCV0047-502	VR	5 K
R195	QRD167J-103	CR	10 K 1/6 W J
R196	SCV0047-502	VR	5 K
R197	QRD167J-103	CR	10 K 1/6 W J
R198	SCV0047-502	VR	5 K
R199	QRD167J-103	CR	10 K 1/6 W J
R200	SCV0047-502	VR	5 K

Symbol No.	Part No.	Part Name	Description
R201	QRD167J-682	CR	6.8 K 1/6 W J
R202	SCV0047-502	VR	5 K
R203	QRD167J-103	CR	10 K 1/6 W J
R204	SCV0047-502	VR	5 K
R205	" -502	"	5 K
R206	QRD167J-332	CR	3.3 K 1/6 W J
R207	" -473	"	47 K " "
R208	" -102	"	1 K " "
R209	" -473	"	47 K " "
R305	" -222	"	2.2 K 1/6 W J
C 1	QET41ER-106	MY Cap	10 50 V
C 2	QET61EM-476	E Cap	47 25 V
C 3	QFM31HK-103	MY Cap	0.01 50 V
C 4	QET61EM-476	E Cap	47 25 V
C 5	QFM31HK-103	MY Cap	0.01 50 V
C 6	" -103	"	0.01 "
C 7	QET61EM-476	E Cap	47 25 V
C 8	" -476	"	47 "
C 9	QCS31HJ-221	C Cap	2200 P 50 V
C10	" -221	"	2200 P "
C11	" -221	"	2200 P "
C12	" -221	"	2200 P "
C13	" -221	"	2200 P "
C14	" -221	"	2200 P "
C15	QFM31HK-103	MY Cap	0.01 "
C16	QET61EM-107	E Cap	100 25 V
C17	" -476	"	47 "
C18	" -476	"	47 "
C19	–	–	
C20	–	–	
C21	–	–	
C22	–	–	
C23	–	–	
C24	–	–	
C25	QET61EM-107	E Cap	100 25 V
C26	" -107	"	100 "
C27	" -107	"	100 "
C28	" -107	"	100 "
C29	QET61AM-227	"	220 10 V
C30	QET61EM-107	"	100 25 V
C31	–	–	
C32	–	–	
C33	–	–	
C34	QET61EM-107	E Cap	100 25 V
C35	" -107	"	100 "
CN 1	SS31002-050	Plug Header	50 Pin
CN 2	" -026	"	26 Pin
CN 3	–	–	
CN 4	–	–	
CN 5	–	–	
CN 6	–	–	
CN 7	–	–	
CN 8	–	–	
CN 9	–	–	
CN10	–	–	
CN11	–	–	
CN12	–	–	
CN13	SS31054-008	Card Fit S	8 Pin
CN14	–	–	
CN15	SS31054-005	Card Fit S	5 Pin

8.2.2 SB-1 Board Ass'y SCK1033-00A

Symbol No.	Part No.	Part Name	Description
CN16	SS31054-024	Card Fit S	24 Pin
CN17	" -020	"	20 Pin
CN18	" -015	"	15 Pin
CN19	" -034	"	34 Pin
CN20	" -016	"	16 Pin
CN21	SS30662-003	L. Post Header	
CN22	" -003	"	
CN23	" -003	"	
CN24	" -003	"	
TP 1	SCV0025-102	Test Point	
TP 2	" -102	"	

Symbol No.	Part No.	Part Name	Description
IC 1	TC4532BP	I.C.	TOSHIBA
IC 2	"	"	"
IC 3	"	"	"
IC 4	"	"	"
IC 5	"	"	"
IC 6	"	"	"
IC 7	TD62502P	"	"
IC 8	"	"	"
IC 9	TC4051BP	"	"
IC10	TD62502P	"	"
IC11	TC4051BP	"	"
IC12	TD62502P	"	"
IC13	TC4051BP	"	"
IC14	TD62502P	"	"
IC15	TC4051BP	"	"
IC16	TD62502P	"	"
Q 1	2SA564R	Transistor	MATSUSHITA
Q 2	2SC828R	"	"
Q 3	2SA564R	"	"
Q 4	2SC828R	"	"
Q 5	2SA564R	"	"
Q 6	2SC828R	"	"
Q 7	2SA564R	"	"
Q 8	2SC828R	"	"
D 1	MA165	Silicon Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	1S1555	"	"
D 7	MA165	"	"
D 8	"	"	"
D 9	"	"	"
D10	"	"	"
D11	"	"	"
D12	"	"	"
D13	"	"	"
D14	"	"	"
D15	"	"	"
D16	"	"	"
D17	"	"	"
D18	"	"	"
D19	"	"	"
D20	"	"	"
D21	"	"	"
D22	"	"	"
D23	"	"	"
D24	"	"	"
D25	"	"	"
D26	1S1555	"	"
D27	MA165	"	"
D28	"	"	"
R 1	QRD167J-102	CR	1 K 1/6 W J
R 2	" -473	"	47 K " "
R 3	" -473	"	47 K " "
R 4	" -473	"	47 K " "

Symbol No.	Part No.	Part Name	Description
R 5	QRD167J-473	CR	47 K 1/6 W J
R 6	" -473	"	47 K " "
R 7	" -473	"	47 K " "
R 8	" -473	"	47 K " "
R 9	" -473	"	47 K " "
R10	" -102	"	1 K " "
R11	" -473	"	47 K " "
R12	" -473	"	47 K " "
R13	" -473	"	47 K " "
R14	" -473	"	47 K " "
R15	" -473	"	47 K " "
R16	" -473	"	47 K " "
R17	" -473	"	47 K " "
R18	" -473	"	47 K " "
R19	" -102	"	1 K " "
R20	" -473	"	47 K " "
R21	" -473	"	47 K " "
R22	" -473	"	47 K " "
R23	" -473	"	47 K " "
R24	" -473	"	47 K " "
R25	" -473	"	47 K " "
R26	" -473	"	47 K " "
R27	" -473	"	47 K " "
R28	" -102	"	1 K " "
R29	" -473	"	47 K " "
R30	" -473	"	47 K " "
R31	" -473	"	47 K " "
R32	" -473	"	47 K " "
R33	" -473	"	47 K " "
R34	" -473	"	47 K " "
R35	" -473	"	47 K " "
R36	" -473	"	47 K " "
R37	" -473	"	47 K " "
R38	" -473	"	47 K " "
R39	" -473	"	47 K " "
R40	" -473	"	47 K " "
R41	" -473	"	47 K " "
R42	" -562	"	5.6 K " "
R43	" -103	"	10 K " "
R44	" -103	"	10 K " "
R45	" -103	"	10 K " "
R46	" -103	"	10 K " "
R47	" -104	"	100 K " "
R48	" -104	"	100 K " "
R49	" -104	"	100 K " "
R50	" -562	"	5.6 K " "
R51	" -103	"	10 K " "
R52	" -103	"	10 K " "
R53	" -103	"	10 K " "
R54	" -103	"	10 K " "
R55	" -104	"	100 K " "
R56	" -104	"	100 K " "
R57	" -104	"	100 K " "
R58	" -562	"	5.6 K " "
R59	" -103	"	10 K " "
R60	" -103	"	10 K " "
R61	" -103	"	10 K " "
R62	" -103	"	10 K " "
R63	—	—	
R64	QRD167J-104	CR	100 K 1/6 W J
R65	" -104	"	100 K " "
R66	" -104	"	100 K " "
R67	" -562	"	5.6 K " "
R68	" -103	"	10 K " "
R69	" -103	"	10 K " "

Symbol No.	Part No.	Part Name	Description
R70	QRD167J-103	CR	10 K 1/6 W J
R71	" -103	"	10 K " "
R72	" -104	"	100 K " "
R73	" -104	"	100 K " "
R74	" -104	"	100 K " "
R75	" -473	"	47 K " "
R76	" -473	"	47 K " "
C 1	QET61EM-106Z	E Cap	25 10 V
C 2	" -106Z	"	25 "
C 3	" -106Z	"	25 "
C 4	" -106Z	"	25 "
C 5	" -106Z	"	25 "
S 1	SCV0292-150	Push Switch	
S 2	"	"	
S 3	"	"	
S 4	"	"	
S 5	"	"	
S 6	"	"	
S 7	"	"	
S 8	"	"	
S 9	"	"	
S10	SCV0292-140	"	
S11	"	"	
S12	"	"	
S13	"	"	
S14	"	"	
S15	"	"	
S16	"	"	
S17	"	"	
S18	"	"	
S19	SCV0292-130	"	
S20	"	"	
S21	"	"	
S22	"	"	
S23	"	"	
S24	"	"	
S25	"	"	
S26	"	"	
S27	"	"	
S28	SCV0292-100	"	
S29	"	"	
S30	"	"	
S31	"	"	
S32	"	"	
S33	"	"	
S34	"	"	
S35	"	"	
S36	"	"	
S37	"	"	
S38	"	"	
S39	"	"	
S40	"	"	
S41	"	"	

8.2.3 SB-2 Board Ass'y SCK1034-00A

Symbol No.	Part No.	Part Name	Description
IC 1	TC4532BP	I.C.	TOSHIBA
IC 2	"	"	"
IC 3	"	"	"
IC 4	TD62502P	"	"
IC 5	TC4051BP	"	"
IC 6	TD60502P	"	"
IC 7	TC4051BP	"	"
IC 8	TD62502P	"	"
Q 1	2SA564R	Transistor	MATSUSHITA
Q 2	2SC828R	"	"
D 1	MA165	Silicon Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	"	"	"
D 7	"	"	"
D 8	"	"	"
D 9	1S1555	"	"
D10	MA165	"	"
D11	1S1555	"	"
R 1	QRD167J-102	CR	1 K 1/6 W J
R 2	" -473	"	47 K " "
R 3	" -473	"	47 K " "
R 4	" -473	"	47 K " "
R 5	" -473	"	47 K " "
R 6	" -473	"	47 K " "
R 7	" -473	"	47 K " "
R 8	" -473	"	47 K " "
R 9	" -473	"	47 K " "
R10	" -473	"	47 K " "
R11	" -473	"	47 K " "
R12	" -473	"	47 K " "
R13	" -473	"	47 K " "
R14	" -473	"	47 K " "
R15	" -473	"	47 K " "
R16	" -102	"	1 K " "
R17	" -102	"	1 K " "
R18	" -473	"	47 K " "
R19	" -473	"	47 K " "
R20	" -473	"	47 K " "
R21	" -102	"	1 K " "
R22	" -102	"	1 K " "
R23	" -102	"	1 K " "
R24	" -473	"	47 K " "
R25	" -103	"	10 K " "
R26	" -103	"	10 K " "
R27	" -103	"	10 K " "
R28	" -562	"	5.6 K " "
R29	" -103	"	10 K " "
R30	" -104	"	100 K " "
R31	" -104	"	100 K " "
R32	" -104	"	100 K " "
R33	–	–	
R34	QRD167J-822	CR	8.2 K 1/6 W J
R35	" -153	"	15 K " "
R36	QRD167J-104	CR	100 K 1/6 W J
R37	" -103	"	10 K " "
R38	" -103	"	10 K " "
R39	" -104	"	100 K " "
R40	" -104	"	100 K " "
R41	" -560	"	56 " "
R43	" -221	"	220 " "
C 1	QET41ER-106	E Cap	10 25 V
C 2	" -106	"	10 "
S 1	SCV0292-100	Push Switch	
S 2	"	"	
S 3	"	"	
S 4	"	"	
S 5	"	"	
S 6	"	"	
S 7	"	"	
S 8	"	"	
S 9	"	"	
S10	"	"	
S11	"	"	
S12	"	"	
S13	"	"	
S14	"	"	
S15	"	"	
S16	"	"	
S17	SCV0292-120	"	
S18	QSL2218-111	Lever Switch	
S19	QSL2318-002	"	
S20	QSL2218-111	"	
S21	"	"	
S22	"	"	
S23	"	"	
S24	"	"	
S25	"	"	
CN 3	SS31053-034	Card Fit R	34 P
CN 4	SS30662-006	Connector	
CN 5	" -003	"	
CN 6	SS31053-004	Card Fit R	4 P
CN 7	" -015	"	15 P

8.2.4 SB-3 Board Ass'y SCK4010-00A

Symbol No.	Part No.	Part Name	Description
S 1	QSL2218-111	Lever Switch	
S 2	" -111	"	
S 3	" -111	"	

8.2.5 CK Board Ass'y SCK3040-00A

Symbol No.	Part No.	Part Name	Description
IC 1	NJM4560D	I.C.	JRC
IC 2	"	"	"
IC 3	"	"	"
IC 4	TC4053BP	"	TOSHIBA
Q 1	2SA564R	Transistor	MATSUSHITA
Q 2	2SC828R	"	"
D 1	MA165	Diode	MATSUSHITA
D 2	"	"	"
D 3	"	"	"
D 4	"	"	"
D 5	"	"	"
D 6	"	"	"
D 7	"	"	"
R 1	QRD167J-472	CR	4.7 K 1/6 W J
R 2	SCV0047-502	VR	5 K
R 3	QRD167J-102	CR	1 K 1/6 W J
R 4	SCV0047-502	VR	5 K
R 5	QRD167J-102	CR	1 K 1/6 W J
R 6	SCV0290-001	VR	1 K
R 7	QRD167J-472	CR	4.7 K 1/6 W J
R 8	" -102	"	1 K " "
R 9	SCV0047-502	VR	5 K
R10	" -502	"	5 K
R11	QRD167J-102	CR	1 K 1/6 W J
R12	SCV0290-001	VR	1 K
R13	QRD167J-472	CR	4.7 K 1/6 W J
R14	SCV0047-502	VR	5 K
R15	QRD167J-102	CR	1 K 1/6 W J
R16	SCV0047-502	VR	5 K
R17	QRD167J-821	CR	820 1/6 W J
R18	SCV0290-001	VR	1 K
R19	QRD167J-223	CR	22 K 1/6 W J
R20	" -223	"	22 K " "
R21	" -473	"	47 K " "
C 1	QET61ER-107	E Cap	100 25 V
C 2	" -107	"	100 "
C 3	" -107Z	"	100 "
CN8	SS31053-004	Card Fit R	
CN9	" -005	"	
CN10	" -016	"	
	SS30644-004	Post Header	

8.2.6 BCC Board Ass'y SCK3037-00A

Symbol No.	Part No.	Part Name	Description
IC 1	NJM4560D	I.C.	JRC
IC 2	"	"	"
R 1	QRD167J-472	CR	4.7 K 1/6 W J
R 2	SCV0046-502	VR	5 K
R 3	QRD167J-103	CR	10 K 1/6 W J
R 4	SCV0046-502	VR	5 K
R 5	QRD167J-103	CR	10 K 1/6 W J
R 6	SCV0046-103	VR	10 K
R 7	SCV0290-001	"	1 K
R 8	SCV0046-502	"	5 K
R 9	SCV0290-001	"	1 K
R10	QRD167J-223	CR	22 K 1/6 W J
R11	SCV0046-103	VR	10 K
R12	SCV0290-001	"	1 K
R13	QRD167J-392	CR	3.9 K 1/6 W J
R14	SCV0046-502	VR	5 K
R15	QRD167J-221	CR	220 1/6 W J
R16	" -221	"	220 " "
R17	" -221	"	220 " "
C 1	QET61EM-107	E Cap	100 25 V
CN10	SS31053-005	Card Fit R	

8.2.7 DS Board Ass'y SCK3036-00A

Symbol No.	Part No.	Part Name	Description
IC 1	NJM4560D	I.C.	JRC
IC 2	"	"	"
R 1	QRD167J-472	CR	4.7 K 1/6 W J
R 2	SCV0046-502	VR	5 K
R 3	QRD167J-103	CR	10 K 1/6 W J
R 4	SCV0046-502	VR	5 K
R 5	QRD167J-103	CR	10 K 1/6 W J
R 6	SCV0046-103	VR	10 K
R 7	SCV0290-001	"	1 K
R 8	SCV0046-502	"	5 K
R 9	SCV0290-001	"	1 K
R10	QRD167J-223	CR	22 K 1/6 W J
R11	SCV0046-103	VR	10 K
R12	SCV0290-001	"	1 K
R13	QRD167J-472	CR	4.7 K 1/6 W J
R14	SCV0046-502	VR	5 K
C 1	QET61EM-107Z	E Cap	100 25 V
CN14	SS31053-005	Card Fit R	

8.2.8 AU Board Ass'y SCK3038-00A

Symbol No.	Part No.	Part Name	Description
IC 1	NJM4560D	I.C.	JRC
Q 1	2SC828R	Transistor	MATSUSHITA
R 1	QRD167J-103	CR	10 K 1/6 W J
R 2	" -103	"	10 K " "
R 3	–	–	
R 4	QRD167J-101	CR	100 1/6 W J
R 5	" -221	"	220 " "
C 1	QET61EM-106	E Cap	10 25 V
S 1	SCV0292-130	Push Switch	
CN12	SS31053-008	Card Fit R	